

**BY G. F. T.**

## Two Gentlemen From Australia

If Mahomet can't go to the mountains, it does sometimes come to pass that the mountains will come to Mahomet. Not that we consider ourselves prophets, by any means, but we have found that we don't always have to travel to meet interesting people. Sometimes they walk in through the front door.

Take the Two Gentlemen from Australia (that's the way they pronounced "Australia"), for instance. WILLIAM QUEALE, managing director of Mechanical Products, Limited, Adelaide, Australia, and R. J. W. KENNELL, also of Australia, have spent considerable time with us during their sojourn in America, and that time has been some of the most pleasant this job has ever afforded.

While in Detroit they also spent much time at Kelvinator, and returned from the Plymouth Road establishment with the announcement that they are now exclusive Kelvinator representatives for Australia.

Mechanical Products, Ltd., their company, manufactures Electrice (that used to be the trade name of the old Belding-Hall refrigerator, manufactured at Belding, Mich.) electric refrigerators. And Mr. Queale claims that they make more of the component parts of each refrigerator than Kelvinator does—and Kelvinator makes just about everything for an electric refrigerator you can think of, off-hand, except the motors. Mr. Queale's company makes the motors, too.

Their plant consists of several units—office building, press room, sheet metal department, foundry, cabinet department, pattern makers' shop, etc.—and contains 110,000 sq. ft. of floor space.

They make not only household refrigerators, but commercial condensing units and ice cream cabinets. Also they make radios—complete, including speakers and tubes—and meters, motors, transformers, and ignition coils. Interesting facts about the manufacture of their refrigerators:

Corkboard insulation is employed exclusively. No brass castings are used—all brass parts are machined out of hot brass stampings. Every steel part which is liable to rust or corrosion is cadmium plated, even if it will be painted ultimately. Their foundry claims it turns out the highest quality of refrigerator castings to be found anywhere.

From the standpoint of the American manufacturer, the most important thing about Australia is its tariff. Over there they must pay \$300 and up for the smallest electric refrigerators manufactured in America. Australian-made refrigerators quote prices in the same range. Frigidaire and Kelvinator have both done excellent selling jobs in this continent.

Mr. Queale tells us that the Ford V-8 automobile sells for around \$1,700 in Australia, and even at that figure is the best-selling car in the land!

## Australia as a Market

Like other portions of the loosely-held-together and so-called British Empire, Australia has come out of the depression rapidly. Sizable tax reductions have been made during the last year, unemployment has been materially reduced, prices are up, wages are up, sales are up, and the country in general seems booming.

Within a century Australia has passed from the colonial pioneering stage and the Gold Rush days, has reclaimed immense tracts of primeval forests and brought 25,000,000 acres of land under cultivation, has built some 27,000 miles of railroads, has constructed huge dams for water conservation and irrigation, has developed nearly 22,000 manufacturing concerns, and has established several cities of front rank.

Eighty-four per cent of the people living in the Commonwealth are Australian-born, and 97 per cent of the total population of six and one-half millions are of British stock.

There are still, however, about 59,000 full-blooded and 19,000 half-caste aborigines abroad in the land. About half of these are nomadic, and still live in the remote unsettled areas of the interior and north in the primitive style of the Stone Age, using the fire stick, stone knife, and tomahawk! Most of the remainder are in employment on the outer sheep and cattle stations, or are settled in government camps.

With an area of 2,974,581 square miles, Australia is practically equivalent in size to the United States. One-third of this immense area lies within the tropics; the other two-thirds are in the temperate zone. Over the greater part of the continent the climate resembles that of California.

When we are buttoning up our overcoats, Australians are wearing flannels and linens. Australian seasons run approximately as follows:

Spring—September, October, November.

Summer—December, January, February.

Autumn—March, April, May.

Winter—June, July, August.

During winter months Australians can ski or go tobogganing, and within two days can travel northward and enjoy surf-bathing on a sun-kissed coast! Now there's a climatic range for you.

Sydney and Melbourne each have populations of more than a million. Adelaide and Brisbane have each about one-third of a million, Perth has a population of 210,000, and Hobart 58,000.

Wool is Australia's most important industry. The Commonwealth produces more than a quarter of the world's wool requirements, and is especially noted for its fine quality merino wool. Wheat growing is also important, as are cattle breeding and horse raising.

Cane sugar, tobacco, rice, fruit, wine, hardware, mining, iron and steel, and many types of manufacturing also rank as major products in Australia.

The people are prosperous, contented, industrious, and comprise an excellent market for specialty articles such as refrigerators, according to Messrs. Queale and Kennell.

## And Now We Turn To South Africa

Another caller from afar—from very much afar—was SOL SILVER of Silver Motor Supplies, Johannesburg and Cape Town, South Africa. Mr. Silver is in this country seeking a franchise for an American electric refrigerator.

Frigidaire and Norge are doing an excellent job of selling refrigerators in South Africa, he reported. Kelvinator and Crosley are also making progress, declared Mr. Silver, as are General Electric and Westinghouse. Between them they sell from 15,000 to 20,000 units a year in the Union of South Africa. Prospects are bright for raising that total greatly in the next few years.

Refrigeration is needed badly the year 'round down there, and refrigeration selling is not so much a seasonal business in South Africa as it is in this country. In the summer temperatures reach 124° F. in the shade; whereas a winter day down there is about like our celebrated Day in June.

Our Mr. REDEKER, who never really begins to enjoy life until the mercury in the thermometer busts the top of the glass tube, immediately sought a reporting assignment in this export market.

## A Century of Progress Reopens Saturday

RUFUS DAWES, Major LENOX LOHR, and the other gentlemen who govern the operation of "A Century of Progress" World's Fair—which will reopen for the second successive year in Chicago Saturday, May 26—are said to be so tight that every time a penny comes out of their pockets, Abraham Lincoln blinks at the light.

Be that as it may, it must be conceded that they are good business men. "A Century of Progress" is the first World's Fair which ever paid its own way.

More than a week before the opening of the second year of A Century of Progress exposition, the management was able to announce the advance sale of \$3,500,000 worth of admission tickets.

On Thursday, the business men and civic leaders who originally underwrote the exposition were relieved of their financial liability by the retirement of the last bonds of an approximately \$6,000,000 guaranteed issue by the Fair corporation, the final payment, amounting to \$972,000, being made possible by the big ticket sale.

The remaining obligations of the exposition consist of something less than \$4,000,000 in unguaranteed bonds, held mostly by underwriters who waived guarantee, and it is estimated



(1) Jimmie Davin (right) sales promotion manager of General Household Utilities, gives sage advice while Bert Greggs, pilot of Bill Grunow's private plane, and a mechanic repair a flat tire. (2) Davin meets Charlie Hyde of the Griffith Distributing Co. in Cincinnati, who has brought along Otto Bowman and George H. Deacon, Grunow division men. (3) Forty minutes later Jimmie and Otto landed in Louisville, where they were met by Tom French and Harry Harlow (center pair) of the Peaslee-Gaulbert Corp. Flying time on this Chicago-Indianapolis-Louisville-Chicago trip was 5 hours, 50 minutes.

that 12,000,000 paid admissions to the Fair will make certain their retirement.

Since the paid admissions last year were in excess of 23,000,000, and the preliminary sale this year is far greater than the advance sale in 1933, there is every expectation that the bonds will be taken care of early in the summer.

In the past expositions frequently have considered bond purchasers practically donors and have made no great effort to repay them. The Columbian Exposition of 1893, which had a \$5,000,000 government subsidy (something the present Fair did not seek), paid about 10 cents on the dollar to its bondholders.

A Century of Progress exposition will not only be the first one to open for a second season, it will be the first one on record to meet its bonded obligations on a 100 per cent payment basis as a private business institution would expect to do.

Yet it is doubtful whether any other exposition ever opened in the face of general economic conditions as adverse as those which faced the Chicago Fair last spring and which it was obliged to combat throughout the whole of the summer and autumn.

Visitors last season were welcomed courteously, treated fairly, and made to feel at home. The accommodations, both for man and car, were more satisfactory than most people expected and there was no gouging. The exhibits and entertainment on the inside were up to specifications, and people who made sacrifices to travel to Chicago at a time when a dollar was a dollar, went away satisfied.

If the exposition enjoys a big patronage this season, it will be because the public has pleasant memories and believes the management when it says it is offering something new which is even better than the old.

## A Prediction

Last August we missed a chance to scoop the world by being too cautious. We learned, in roundabout fashion, from a little group which maintains headquarters in the Seneca hotel—a group which has a helluva lot to do with the running of Chicago (BILL GRUNOW, JUD SAYRE, CHARLIE D'OLIVE, JOHN DITZELL, and some other Chicagoans will know whom we mean) that the Fair would reopen in 1934.

Because of the unusual and certainly unquotable nature of the source we decided not to risk printing and prediction. And were we sorry when it came true!

Now we have another prediction from the same source. We'll print this one: Northerly Island (that part of the exposition grounds on which the Electrical Building is located) will be kept as a permanent resort, open every summer. Mark these words, and remember who told you.

## Colorful Opening

Announcement of plans for opening of the second year of A Century of Progress indicates that the ceremony will be extremely colorful.

Major Lenox R. Lohr, general manager of the Fair, states that more than 10,000 marchers will be in the procession which will mark the first formal ceremony.

Marching units in gay uniforms, dozens of bands, army, navy, and marine corps and representatives of

state and federal government will move down Michigan Ave. at 1 p. m. to disband at the fairgrounds.

While the Fair will open its gates to the public at 9 a. m. on May 26, formal ceremonies will be staged at 9:15 p. m. in order that sound pictures of President Roosevelt in the act of pressing a button that will light the fairgrounds may be shown.

The picture will, of course, be made prior to May 26, and at the moment that the President actually is pressing the button that will start the lighting system in operation, the sound picture will be shown on three screens on the fairgrounds.

At this time short addresses will be made by President Rufus C. Dawes of the Fair, Major Lohr, Mayor Kelly, and Governor Horner. At the same time Mrs. Roosevelt will push a button that will start operation of a huge electrical fountain in the north lagoon.

According to figures being given out by the Keep Chicago Ahead Civic Committee, this year's A Century of Progress will be responsible for a pay roll of at least \$60,000,000 during the five months it will be in operation.

The total number of employees that may be credited to the Fair and its activities, according to the committee, will be approximately 25,000 persons in the Fair proper and 100,000 in hotels, amusement establishments, laundries, public utilities, and other places, at an average wage of about \$22.50 per week.

## The New Fair

Five million dollars have been spent by Fair officials on new construction work. In addition to this, the headlining exhibitors, General Motors, Chrysler, Firestone, and others are spending large sums to remodel and rearrange their buildings.

The most notable addition to the new exhibitors is that of Henry Ford.

Eleven acres of space have been taken by Ford for his 1,100-foot building and landscaped park.

Daily concerts by the Detroit Symphony orchestra are planned, and historical exhibits in the development of the automobile and transportation will be the feature of the immense displays planned for the building.

Hiram Walker, Canadian distillers, located across the river from Detroit, will have a two-story building extending from the center of the 16th St. bridge in the south lagoon.

The Fair's most important contribution to the new structures is a magnificent fountain which will be the feature display of the 1934 show. Starting from the center of the 12th St. bridge that connects the mainland with Northerly Island, a brilliantly lighted bank of water will extend 670 feet into the north lagoon. Back of the fountain, on the lower level of the bridge, a bank of 40 gigantic searchlights will play about the night sky in a medley of color.

The water dome of the fountain will be 75 feet in height. Sixty-eight thousand gallons of water, enough to meet the requirements of a city of a million inhabitants for the time specified, will flow through the fountain every minute it is in operation. Lights sufficient to illuminate a city of 150,000 will make the fountain a blaze of colors as they blend through six different shades.

Ten new colors have been invented for the Fair, and the various buildings have been completely repainted.

The plans this year call for a few predominant colors shaded into sym-

pathetic combinations. The entire transportation group, for instance, will be unified by a single shade of white, according to this new color scheme.

All of these changes, plus the addition of quaint and historic foreign villages will give the visitors to the big show something to talk about. Where last year's mingling of modernism and carnival left much to be desired, the 1934 edition will be more substantial and not so sideshowish.

The 1934 visitor may not see Sally Rand, but neither will he have to struggle through the hurly-burly Midway to reach the south end of the Fair, nor will he find his taste for the quaint beauty of foreign places unsatisfied. Bright cafes, music, folk dancing, and gaiety will add considerably to the pleasure of touring the grounds.

"Around the world on the fairgrounds" will be a literal possibility this year, for the visitor can tour the villages and pavilions of more than a dozen nations with little effort.

The deserved success of Picturesque Belgium, the only "real" foreign village of last year's show, has encouraged a wholesale invasion of the grounds. Thirteen nationalities will be represented with buildings and landscaped grounds.

The Swiss village, "La Suisse Pittoresque;" the English village to be known as "Old England;" a German mountain village to be called the "Black Forest Village;" an old Spanish village; a Tunisian village of Northern Africa; an Irish village; an early American settlement known as the "Colonial Village;" a Dutch village with its dykes and canals; an Italian village; a native Mexican settlement; the streets of Shanghai; Picturesque Belgium; and the Streets of Paris (modified and considerably purified) will comprise the large group of foreign replicas featured on the grounds.

Sweden, Czechoslovakia, the Philippines, and a few other countries, including the large Italian pavilion, will be officially sponsored exhibits of the new Fair as they were of last year's.

Of interest to everyone contemplating a trip to the Fair is the assurance that prices within the grounds will be lower even than those of a year ago, when the average day's expenditure of a visitor, not counting general admission, but including meals and transportation within the grounds, was only \$1.17.

All attractions are to scale down their prices. Complete meals will be available at prices ranging from 15 cents to \$2. There will be no turnstiles at the doors of the comfort stations.

Seats for 35,000 have been added to the 65,000 seats of last year, making 100,000 places for rest and calm inspection of the myriad marvels within view.

One hundred buildings have been ripped down to make room for better exhibits, which will be ready for the opening on May 26. Space for concessions is in such great demand that air rights over the shores of the lagoons are being leased to concessionaires.

Outstanding features of the Fair of 1933, all of which are being retained, naturally will form a substantial part of the new Fair. The main exhibition halls will be filled with new or reconstructed displays. In the great court of the Hall of Science twice daily will be presented a scientific demonstration, the subject varying from day to day. This science theater will have 5,000 seats, all free.

In Ford park, adjoining, visitors will ride in automobiles over the Roads of the World. Another part of the Ford exhibit will be devoted to soy bean culture and products obtainable from the soy bean.

Three of the world's leading packing industries, Swift & Co., Armour & Co., and Wilson & Co., will have new buildings at the Fair.

In the theater of the Swift exhibit the Chicago Symphony Orchestra will give two concerts daily for a period of 10 weeks beginning July 1. Fredrick A. Stock will conduct.

Two of the world's greatest symphony orchestras will thus give free daily concerts to Fair patrons!

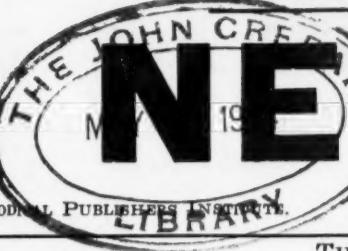


Snapshots of three recent visitors to the new home of Electric Refrigeration News: Messrs. Miller and Arnolde of Minneapolis-Honeywell, and Sales Promotion Manager J. L. Rosenmiller of York. Mr. Miller is waving. Mr. Arnolde is in a light suit, and Mr. Rosenmiller presents a classic profile against the light at the far right.

# ELECTRIC REFRIGERATION NEWS

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## Air Conditioning Has Real Demonstration At 1934 World's Fair

### Streamlined Trains Major Attraction to Crowd of 155,000 on First Day

By George F. Taubeneck

CHICAGO—Considerably more educational, and much less honky-tonk, the 1934 edition of A Century of Progress exposition opened here Saturday, May 26, to a record gate. Attendance figures show that the turnstiles clicked 154,945 times for paid admissions last Saturday, which is almost 25 per cent better than the opening day of the 1933 Fair, when an attendance of 119,675 was registered.

Air conditioning plays a more important role in the 1934 Fair even than it did last year. In fact, it shares honors with swift transportation as the outstanding contribution of science to better living to be found among the exhibits. Hit of the show this year, from the standpoint of dramatic interest, is undoubtedly the air-conditioned, high-speed, oil-burning, streamlined trains.

A spectacular parade of 10,000 marchers, talking pictures of President and Mrs. Roosevelt turning on the lighting system and the new fountain, and a speech radioed by Admiral Richard E. Byrd from his lonely vigil in antarctic wastes were the most notable events of the first-day ceremonies.

Fairbanks, Morse & Co., Frigidaire Corp., General Electric Co., Norge Corp., Sears Roebuck & Co., Servel, Inc., Stewart-Warner Corp., and Westinghouse Electric & Mfg. Co. are among the refrigeration manufacturers which have exhibits at the Fair. Although not listed as exhibitors, (Concluded on Page 21, Column 3)

### Seeger Philadelphia Branch to Move

PHILADELPHIA—Seeger Philadelphia, Inc., distributor of Seeger products here, will move to larger quarters at 835 North Broad St. on July 1, according to E. C. Richard. At present the company is located at 717 North Broad St. (Concluded on Page 21, Column 2)

## Alabama and Georgia Dealers Appeal to President Roosevelt

(Editor's Note: The following statement and letters from Georgia and Alabama dealers explain their views on the TVA program for the merchandising of low-cost appliances.)

Frank S. McGaughey, president of the Capital Electric Company, Stewart-Warner distributor, speaking for distributors and dealers in electrical appliances, made the following statement, with reference to press articles heretofore carried regarding developments in connection with the proposed sale of TVA appliances:

"In fairness to the refrigeration industry as represented in Georgia, and the biased statements made to the press, the following information is given:

"At no time has the refrigeration industry in Georgia objected to the sale of TVA merchandise on any basis other than the method of selling this type of electrical merchandise as created for TVA by Mr. Lilienthal, his associates, and the power company officials. The plan is, in our opinion, a deliberate attempt on their part to place the sale of electrical appliances directly in the hands of the public utilities, at the expense of the independent electrical appliance merchants. Mr. Lilienthal's representatives admit that they see no field in this line of endeavor for the independent merchant—that in their opinion electrical merchandise of all types should be sold through the public utilities. The plan as set up makes the public utility the only outlet for electrical appliances of all types, for with this plan electrical appliances

### Mechanical Progress Is Just Starting, Assert Leaders of Industry

By George F. Taubeneck

CHICAGO—Wisconsin threw Columbia for a loss at Alfred P. Sloan's dinner for the nation's leading industrialists at the General Motors building on A Century of Progress exposition grounds Friday night.

Glenn Frank, president of the University of Wisconsin, caused the 300 supposedly staid generals of industry present at the dinner to rise up and cheer like schoolboys when he smote verbally the "retrogressive" theories of the University of Columbia professors who so largely comprise the "Brain Trust."

"The machine has not betrayed us. We have betrayed the machine," cried Dr. Frank. "Science and technology have given us the means by which we may emancipate the race from poverty, drudgery, and insecurity. If we now prove incapable of using these means to the full, the verdict of history upon us will be that we were a people strangled by our own success."

Broadcast over 61 stations of the (Continued on Page 8, Column 1)

### Edison Institute Will Meet Next Monday

NEW YORK CITY—Second annual convention of Edison Electric Institute will open next Monday, June 4, at the Hotel Traymore, Atlantic City, N. J., and will continue through Thursday, June 7.

General sessions of the convention will open Tuesday and will be held Tuesday and Wednesday morning, Wednesday evening, and Thursday morning. Member company representatives will meet Monday, June 4, in closed executive sessions.

Of particular interest to the electrical appliance industry is the Wednesday morning session. T. K. Quinn, vice president, General Electric (Concluded on Page 21, Column 2)

must be sold at a loss to the merchant selling them. Electrical merchandise must be sold at a loss if merchandised according to TVA plans, and only the public utility is in a position to absorb this loss, charging their loss of merchandising naturally to the cost of operating their electrical current, which in turn must reflect to the current consuming public's disadvantage.

"In our opinion, an unlawful combination in restraint of trade has been entered into by representatives of the TVA and EH&FA and the public utilities, specifically for the purpose of driving the independent electrical merchant out of business. The independent electrical merchant has no fight against the lowering of costs to the consumer. He approves of this plan. He only asks for a fair deal. Let the representatives of the TVA, of the utilities and of the manufacturers of electrical products get together with the representatives of the independent merchants and create a fair plan. The manufacturers were forced by the TVA to market a product at an additional loss by virtual threats that they too would be forced out of business. Independent electrical merchants were all disregarded in the plan now being furthered jointly by the TVA and the public utilities, under the guise of saving the public money, which saving will undoubtedly later be passed on to the general public either in the form of taxes or of additional electrical rates.

"We have supported the Government (Concluded on Page 2, Column 1)

## News About DEALERS

In Mocksville, Asheville, Winston-Salem and Hickory, N.C., also Lexington, Ky.

By Elston D. Herron

Fireworks! That's the very best word we can use to give you an idea of what the refrigeration dealer situation is down in Winston-Salem, N. C., where Camel cigarettes come from.

After visiting a half-dozen towns in the South, we'd begun to think competitive squalls didn't exist in that part of the country, but a morning in Winston-Salem made us decide our conclusion had been a bit hasty.

First inkling we got that all was not calm came from a salesman who started right in with, "It's almost a disgrace to be an electric refrigerator salesman in this town. We're made out to be liars and rogues."

### Four Dealers and Utility Having Real Fight

It required another of those piece-together operations to get a picture of just what the trouble is in Winston-Salem. It's centered in the Big Three of the dealers there—Frigidaire, General Electric, and Kelvinator—with the Westinghouse dealer a close fourth in the squabble. This is our slant:

1. The Frigidaire people are sore because G-E and Westinghouse are making such big play of their five-year protection plans.

2. Some dealers say the Frigidaire outlet installed a number of refrigerators just before the last price raise, gave the users options to buy at the old price within a limited period of time, and that isn't making such a big hit.

3. None of the dealers like the refrigeration sales policy of the local utility—it offers lifetime free service (the labor is free, not the parts) and no carrying charge on a 24-months payment plan.

General sessions of the convention will open Tuesday and will be held Tuesday and Wednesday morning, Wednesday evening, and Thursday morning. Member company representatives will meet Monday, June 4, in closed executive sessions.

Week before we were there, the secretary of the local retail merchants' association called a meeting of all the refrigerator dealers in town to see if something could be done to smooth things over. Little was accomplished. A few men got up to give their ideas on the situation, then the meeting closed when one dealer moved that before anything definite was done, it should be determined whether refrigeration dealers come under the national retail code pending approval of another code applying specifically to them.

### 5,000 Winston-Salem Homes Use Refrigerators

Despite all the trouble, however, sales are going right ahead. The Reynolds (Camel) cigarette factory is busy, the Haines underwear mills and Chatham blanket mills are going strong. There are 80,000 people in Winston-Salem, of which some 35,000 are negroes. Wired homes number 12,000, and 5,000 of them have electric refrigerators.

About the middle of the morning, we dropped in at the big store of Brown-Rogers-Dixson, where you can buy—in addition to Frigidaires—farm machinery, electrical supplies, house furnishings, builders' hardware, sporting goods, radios, paints, mill supplies, auto accessories, cutlery, malted milks, and sandwiches.

### Specifications Issue of News Is Helpful

E. C. Smith, Frigidaire salesman, lamented the fact that competition has been so bitter there this spring, said just about the time one salesman interests a prospect in a certain model, along comes another salesman claiming the first one misrepresented the specifications.

"Then we use ELECTRIC REFRIGERATION News specifications issues," he said. "We can prove what we say with your paper."

Household sales so far this year (Concluded on Page 4, Column 1)

## 477,115 Refrigerators Sold in Four Months By 15 Manufacturers

### Caswell Experiments with College Graduates As Salesmen

By Phil B. Redeker

DETROIT—College graduates employed as retail salesmen is the interesting and—from all present indications—successful experiment now being tried here by the retail division of Caswell, Inc., Michigan G-E distributor.

That the experiment is successful is indicated by the fact that all of (Concluded on Page 7, Column 1)

### Kansas City Dealers Bar Special Bonuses

KANSAS CITY—No cash bonuses, gratuities, premiums, or special discounts will be paid directly or indirectly to Kansas City refrigerator salesmen, dealers, or employees for selling, or favoring in the sale, any specific line of electric refrigerators over those of another line, according to a code ruling made effective May 19 by the local refrigerator dealer's organization.

The one exception to this rule is the prizes offered in national contests.

G. W. Weston, secretary-manager of the Electric & Radio Association of Kansas City, in explaining this provision, declares that there has been a tendency on the part of a few wholesalers of electric refrigerators to offer special bonuses (called 'spiffs') to the salesmen of some dealers as a special inducement to push their particular line of refrigerators.

"This practice has promoted confusion and misunderstanding and has worked against the principles of fair, competitive salesmanship," declares Mr. Weston.

"Further, cases are known where the persistence of salesmen on certain lines of refrigerators actually made buyers suspicious with the result that harm has been done to the general cause of electric refrigeration.

"This practice of giving special bonuses has long been styled 'commercial bribery' by the Federal Trade Commission and has been prohibited in practically all of the NRA codes in the merchandising fields. It is prohibited in the NRA wholesalers' code."

### April Sales of 232,124 Units Is Highest in Industry History

DETROIT—Decisively smashing all existing sales records, members of the Refrigeration Division of the National Electrical Manufacturers Association sold 477,115 household electric refrigerators during the first four months of 1934. The total for this year is 2.34 times the 1933 four-months figure of 203,778, and 1.72 times the previous high of 277,154 for this same period in 1933.

April sales of 232,124 electric refrigerators set a new all-time monthly record for sale by Nema companies, the best previous month being June, 1933, when the manufacturers sold 175,550 units.

Monthly unit sales which make up the total are as follows: January, 34,514; February, 75,007; March, 135,470; and April 232,124. In each month of the current year, sales have far exceeded those made during the same months of any previous year.

New York state led all others during April with reported sales of 23,793 units, while Pennsylvania ranked second with 19,094. Third place went to Ohio, where manufacturers sold 17,024 household models. Illinois, with 15,764, and Texas, with 10,402, were fourth and fifth, respectively. Exports to foreign countries and U. S. Possessions during the month amounted to 8,463 units.

The Nema roster now includes the following 20 manufacturers of household electric refrigerators: Apex, Crosley, Frigidaire, General Electric, Gibson, Jomoco, Kelvinator, Leonard, Merchant & Evans, Norge, Potter, Servel, Sparks-Withington, Stewart-Warner, Sunbeam, Trupar, Uniflow, Universal Cooler, Westinghouse, and Wurlitzer. Member companies whose sales are not included in the April report are: Apex, Jomoco, Leonard, Merchant & Evans, and Potter.

### \$559,929 Paid in Taxes On April Shipments

WASHINGTON, D. C.—U. S. Internal Revenue tax collections from manufacturers of mechanical refrigerators in April of this year amounted to \$559,929, as compared with \$207,843 in April, 1933, according to reports released by the Treasury Department.

## Appliance Sale Is Started by Tennessee Valley Authority

WASHINGTON, D. C.—The low-cost appliance promotion campaign of the Electric Home and Farm Authority in the Tennessee Valley Authority region officially opened May 21. It was announced by David E. Lilienthal, president of the EH & FA.

Sale of electric refrigerators, ranges and water heaters carrying the EH & FA emblem began in all areas served directly by TVA power and in the territories served by Commonwealth and Southern Corp. utilities in Tennessee, Alabama and Georgia.

Sale of the emblem appliances on time-payment purchase will be financed by the EH & FA throughout the area affected.

A low finance charge will be made on purchases under the time-payment plan. A single appliance may be financed over a period of three years or less. Purchase of two or more appliances will be financed over a period of four years or less.

Down payment and monthly payment on a single purchase will be not less than \$2. All forms and finance charts will be supplied the retailer and utilities by EH & FA at no cost.

Participation in the plan, Mr. Lilienthal said, is open to all retailers who are approved by the manufacturers of emblem appliances.

Once the sale of an emblem appliance is made, the retailer delivers

the purchaser's contract to the utility serving the purchaser and the utility pays the retailer the cash-sale price of the appliance less the down payment.

A finance chart will be given to dealers on which they will determine the amount of down payments and monthly installments. The utility serving the purchaser will make collection of the monthly instalment at the same time the electric bill is collected.

Mr. Lilienthal stated that a pamphlet giving a detailed explanation of the retailer's participation in the program is now being printed. This pamphlet, he said, will be given wide distribution in the area where initial sales operations begin.

The area in which sale of EH & FA appliances will begin includes virtually all of the state of Georgia, a large part of Birmingham, and the middle part of the eastern section of Tennessee, including the cities of Nashville and Chattanooga.

Sales in the TVA power area will begin at Tupelo, Miss., first city to contract for TVA power.

Sale of the appliances in territory served by other utilities and municipal plants in the TVA states will be authorized upon application of those utilities and adjustment of their rates.

**SPECIFICATIONS OF 285 HOUSEHOLD REFRIGERATORS IN THIS ISSUE**

# DEALERS CLAIM TVA WILL FORCE THEM TO SELL AT LOSS

## Letters of Protest on Appliance Program Sent to Roosevelt

(Concluded from Page 1, Column 2)

ment's Recovery Program fully and completely, and at great expense. We did not believe when we sought relief in the courts and do not believe now that those in places of high authority in the Government want to see a large group of small businesses run completely out of this field by oppressive and discriminatory plans gotten up and promoted by the Power Company.

"The plan which we are seeking to enjoin would force us and all dealers to have their purchases handled through the credit and collecting department of the Georgia Power Company, our chief competitor in this field. We do not believe our Government, when properly informed, will really sanction that sort of thing. One of the many advantages in such an arrangement enjoyed by the Power Company, and which we do not have, is that the Power Company can sell this product at a great loss, then make up this loss by passing it on to the public in rates and other charges.

"We feel that our cause is entirely just and that it will have public sanction."

senators asking for their help in protecting the dealers under the TVA plan for merchandising low-priced electric appliances. Among the dealers signing the letter were Capital Electric Co., Hopkins Equipment Co., Beck & Gregg Hardware Co., Sterchi Furniture Co., Bame's, Inc., Carroll Furniture Co., and Advanced Refrigeration Co.)

May 16, 1934.

President Franklin D. Roosevelt,  
White House,  
Washington, D. C.

Dear Mr. President:

We are writing you this letter as a protest against certain features of the so-called TVA electric appliance merchandising and financing plan. As you probably know, we are engaged in the retail electric refrigeration business, and we are vitally affected by the above mentioned plan.

The Tennessee Valley Authority, in connection with its electric appliance subsidiary, the Electric Home and Farm Authority, Inc., is marketing a so-called T. V. A. model electric refrigerator in the seven states comprising the Tennessee Valley Basin Territory, of which this is one state.

### Qualified Makes of Refrigerators

Under the plan, the refrigerators are manufactured by those manufacturers whose products qualify with the TVA requirements as to mechanical quality and retail sales price. The four makes of refrigerators that have qualified are Norge, Kelvinator, Leonard, Frigidaire, and others may follow. In order to qualify, these re-

frigerators have to sell at a retail price of \$79.95, and under the plan, the retail dealers will receive a gross profit of approximately 22 per cent on this product. The retail cost of doing business, when the business is economically and efficiently administered, is better than 30 per cent of the gross sales realized. At present, we retail dealers are receiving gross profits on our electric refrigerators ranging from 35 to 40 per cent depending upon the particular type, price, etc., involved.

Regardless of the volume that might be obtained through the TVA refrigerator, we cannot possibly sell them at anything but loss. We do not believe that any retail dealer can afford to carry these boxes, with the exception of companies who are primarily engaged in the production and distribution of electric current and which operate retail merchandising departments as a side line to the aforesaid businesses and use said departments primarily for the purpose of developing additional consumers for their electric current. Almost without exception, these power companies operate their merchandising departments at substantial losses.

Certain distributors and dealers in this territory, have filed a petition for an injunction in the Superior Court of Fulton County, Georgia. We are enclosing to you a copy of this petition, upon which a temporary injunction has been granted. We believe the petition sets forth substantially all the principal facts connected with our complaint.

We do not and cannot believe that the Federal Government ever contemplated that the TVA and its subsidiaries should ever be used for the purpose of driving the little man out of business, nor do we believe that it was ever intended that such agencies

should so operate as to create a complete monopoly in electric refrigeration, for the various private power companies operating in this territory. We have no row with the power companies nor with the manufacturers of electric refrigerators, and have in the past always enjoyed pleasant relations with them. If this practice is put into effect and continued in effect, all the dealers situated as we are will be faced with two very disagreeable alternatives. Either we can take on the distribution of the TVA models and continue to sell them at a loss until our entire capital is lost, or else we can hurriedly liquidate on unfavorable terms in such a manner as to salvage at least a portion of our investment. This plan, if put into effect, will also cause tremendous unemployment in the seven states mentioned above, as we will have to discharge our various salesmen, mechanics and office forces, which will throw thousands of people out of work, as well as cause millions of dollars to be lost by the small business men of those states. We have great faith in the genuine friendship of President Roosevelt and his Administration for the little business man, who might be properly termed, the "Forgotten Man." However, unless something is done to stop this plan, we will all be destroyed through an agency of the Administration, which we thought and still believe is pledged to assist us.

### Ask to Be Left Alone

We are not asking for any help from the government other than to be left alone and left undisturbed in our business. We are all cooperating with the NRA, and the various other agencies of the government that are attempting to lift the country out of its economic depression. We have appealed in vain to the TVA authorities, who do not seem to understand our problem. Their principal answer is that through increased volume, we can operate at a profit eventually. There is no more unsound economic principle than to attempt to build up a volume of business at a loss on each sale. It is one of the quickest, surest roads to certain insolvency.

Will you please use the good efforts of your office to do something to assure us of fair treatment in this project.

Thanking you in advance for your cooperation and assuring you that it will be a pleasure to furnish you with more specific details, in case you desire them.

might say for your information, that the cost of the sale of articles of this type on the instalment plan, without giving effect to any profit to the dealer, would be not less than 33 1/3 per cent. Therefore, you realize that if he is permitted to charge only 22 per cent, he immediately sustains a loss of approximately 11 1/3 per cent, which loss must be passed on to purchasers of other commodities in some form.

### Prices Raised on Other Models

Another situation has resulted from this contract, or effort on the part of the TVA, and that is namely, the manufacturers who agreed to build these appliances, realized that the building of them would show them no profit, and in many instances, probably a loss, and as a result they have been compelled and have raised the prices on other units not within this price range.

The merchant contends as follows:

First, that the precedent set of 5 per cent interest in the sale of this commodity, when the same is not available for the purchase of other commodities on the instalment plan, will have a tendency to cause buyers' resistance, and bring about a general demoralization of the instalment business, whether it be refrigerators, furniture, automobiles, or what not.

Second, that it is contrary to the principle of NRA and to the intent and the doctrine that has been promulgated by the President of the United States, to shift the burden from one person to another, meaning thereby, that in equity it is improper for the manufacturer to first sell this appliance at a loss, and it would likewise be improper to force the merchant to do the same thing; that is, absorb approximately 11 1/3 per cent loss by adding this on to other commodities sold in his store.

I cannot personally understand how this is consistent, as I have said before, with the intent, provisions, and principles of NRA, and I cannot believe that any person or official in charge of the administration of Fair Practice Code, is in accord with these efforts of TVA.

In my judgment, it places the Government in a rather bad light, because one department preaches fair dealing and equalization of profits to all purchasers, and another department makes this impossible.

### End Justifies Means

But the answer to all of this seems to be that an effort is being made by TVA to increase the use of electricity, and for these reasons, the end makes possible the means. This of course, as you realize, is a wrong premise and will not stand up to impartial investigation for the following reasons:

If this was carried on to its logical conclusion, the mercantile industry would indeed be utterly and totally destroyed. If other industries or persons interested in the use of commodity were permitted to sell such commodity at or below cost, then indeed the mercantile business, as I have said, would find itself in a chaotic state.

The automobile industry in order to further the use of automobiles, would have the right and privilege to open factories to manufacture tires and accessories, and sell these tires and accessories to the ultimate consumer at or below cost.

The coal people would sell stoves and ranges for like purposes.

The natural gas people would sell gas appliances and things that would further the use of gas in like manner. The water works systems would sell all plumbing and all appliances that would make for the further use of water, in the same manner; and so on down the line.

My understanding of the matter, without having actual information personally, is that all of this grows out of the original contract between TVA and the power companies, by which it was agreed that the corporation known as E.H. & F.A. be organized and that through this corporation, the furtherance of the use of electricity would be put in force through the sale of refrigerators and likely other appliances, on this basis to the consumer.

The merchants feel particularly grieved, because of the fact that TVA inaugurated this system and established the principle, without giving the mercantile interest an opportunity to be heard, and to defend and protect their investments. I understand that it is intended that distribution of these appliances begin next Monday.

I think the matter is sufficiently urgent that some inquiry be started as quickly as possible, and if the facts are as I have outlined to you, that measures be taken immediately to forestall what might otherwise bring about disastrous results.

I will therefore personally appreciate if you will take this matter up, bring it before the proper authorities, and suggest to them the importance of taking action before distribution begins, because if this once begins, the damage might be irreparable.

## How do YOU meet a Sales Situation like THIS?



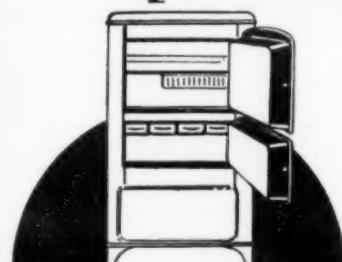
WHEN FREE FINANCING OF INSTALLMENT SALES CHISELS INTO PROFIT MARGINS

WHAT CAN YOU DO?

POTTER OUTLETS HAVE THE ANSWER!  
If you want to know what they do about it, write us and we will tell you! Let us tell you, also, about the Exclusive Potter Franchise.

This is the 5th in a series of Potter messages on meeting the problems which limit your profits. Number 6 will appear in the next issue of E. R. N.

**POTTER**  
REFRIGERATOR  
CORPORATION  
Buffalo, New York





# EVERY G-E REFRIGERATOR OWNER is more than a Satisfied Customer

. . . each is a preferred prospect for other appliances  
in the General Electric Kitchen

THE COMPLETE  
**GENERAL**  **ELECTRIC KITCHEN**

1

● Long recognized the leaders in performance, General Electric refrigerators now capture the admiration of every housewife who appreciates smart styling and modern design. The Monitor Top, with its famous mechanism, has made refrigeration history with an unparalleled record of dependable, trouble-free performance at low cost. And now General Electric offers 5 Years' Protection against failure of the sealed-in-steel mechanism for only \$1 a year!—the standard 1-year warranty, plus 4 years' additional protection for \$5. The G-E Flat Top model, with its smart styling and advanced convenience features offers quality and value found in no other popular-priced refrigerator carrying the standard one-year warranty.

2

● The new *low priced* G-E Marquis range will go far in popularizing electric range cookery. Beautifully modern in its new and efficient table top design, the Marquis is styled in harmony with the G-E Refrigerator and Dishwasher, and is equipped with Hi-Speed CALROD, General Electric's million dollar heating unit that makes the G-E today's fastest cooking range! All-steel body, white porcelain enamel exterior, acid resisting porcelain cooking top and work surface. . . Automatic temperature control with heat indicator light. . . Oversized porcelain oven, counter-balanced shelf type door. . . Economical G-E Thrift Cooker with pudding pan. . . Spacious drawer for utensil storage. . . Appliance receptacle. . . Bakelite switch buttons and door handles with stainless metal inserts.

3

● The General Electric Dishwasher washes and dries an entire day's accumulation of dirty dishes, silverware, glassware, pots and pans, *in 5 minutes*, without hands touching water. No breakage or chipping—the dishes remain stationary and dry by themselves. Scalding water is used, hotter than human hands could touch. This steaming hot spray destroys lurking bacteria, often present on hand-washed dishes, and prevents the spread of such diseases as colds, "flu," etc., that are transmitted through the mouth. No modern kitchen is complete without an electric dishwasher. Enterprising dealers will find it a new source of ever increasing profits.

**CUSTOMER SATISFACTION** is a priceless asset to G-E refrigerator retailers. It builds good will, develops additional refrigerator sales, makes every General Electric refrigerator owner a preferred prospect for the other appliances in the complete General Electric Kitchen.

New G-E retailers will find hundreds of satisfied G-E refrigerator owners in their territories. Each is a potential customer for a G-E range and a G-E dishwasher. Collectively these owners represent an unparalleled source of additional and permanent net profit for the General Electric dealer.

And when you picture the General Electric Kitchen to a woman who needs an electric refrigerator or other electric kitchen appliance,

you have SOLD her an ambition that will make her your customer and keep her your customer.

G-E dealers find more prospects through the General Electric Kitchen "approach" . . . they sell more G-E refrigerators, ranges and dishwashers with the General Electric Kitchen presentation . . . *they can make 3 or more sales and profits per customer* through the G-E Step-By-Step Plan of acquiring the complete General Electric Kitchen.

However large or small your facilities for display may be, you can *pyramid* your sales and profits year after year with the G-E Kitchen sales plan. Write or wire for details. General Electric Company, Specialty Appliance Sales Dept., Section DF53, Nela Park, Cleveland, Ohio

*Visit the General Electric House of Magic at A Century of Progress, Chicago.*

## NORTH CAROLINA DEALERS

(Concluded from Page 1, Column 3)  
have been 150 per cent ahead of last, according to Mr. Smith, and commercial business has been good, particularly in grocery stores and meat markets. "I wish we had more competition for commercial sales here in town (G-E is the only other active outlet)," he said. "Then we'd work harder for business."

In domestic, 4-cu. ft. models have been the big sellers this year. The Frigidaire store has made more sales to colored people this spring than ever before, and its volume of trade-ins on old electric refrigerators is much greater than in any past season.

Brown-Rogers-Dixson sells on the meter plan, but requires a down payment. "We found out last year that it isn't smart selling unless you can collect some money for immediate coverage of installation and delivery costs," remarked the salesman.

Then we met T. B. Dixson, one of the proprietors.

"Salesmen have run away with the refrigeration business here," he started in. "They aren't selling their own refrigerators. They're knocking other makes. Refrigeration has been oversold. People are getting the idea that an electric refrigerator will never get out of order, and will just about end all their troubles."

The proposed refrigeration code should ban any kind of a guarantee for more than a year. A 90-day guarantee would be better still, like that on automobiles. Why should the public get long-time service on refrigeration when it doesn't get it on anything else? Dealers can't give something for nothing."

### G-E Dealer's Business Increases 20 to 30%

Household business of the Bocock-Stroud Co., G-E dealer, is between 20 and 30 per cent over last year, said H. S. Wilson, sales manager. He puts no great emphasis on commercial business, said there are surprisingly few business establishments in town of the type requiring refrigeration.

The dealer is doing more advertising this year than it has ever done before—newspaper, radio, billboard, and direct mail. Mr. Wilson finds the latter only moderately effective, because of difficulty in keeping lists up to date.

Some sales are being made to negroes, principally those educated in the North, who have come back to work as lawyers, school teachers, doctors, etc.

### A Dozen Electrolux Units in Winston-Salem

Several dealers in Winston-Salem are just starting out in refrigeration this spring, or have dropped one line in favor of another. Huntley-Stockton-Hill Co., another branch of the Leonard dealer in Durham, N. C., is selling Leonard. The Haverty Furniture Co. has taken on Stewart-Warner. Norge dealer is C. R. Williams & Co.

Clinard Electric Co., headed by B.

C. Clinard, is the newly appointed Westinghouse dealer in town. Its lines last season were Leonard and Grunow. At the present time, there is no Grunow dealer there. Clinard handles Electrolux, too, but does very little with it, there are only a dozen or so gas refrigerators in Winston-Salem. "That's because electrics have had so much promotion," said Mr. Clinard.

Because he's just starting with a new line, this dealer has not taken a major part in the local fracas, and said he's going to try to stay out, if possible. He believes he will move three times as many refrigerators this year as he did last. His salesmen are permitted to make allowances on old ice boxes, but are held between \$5 and \$19.

The town's colored population doesn't comprise much of a market for refrigeration, Mr. Clinard thinks. "Many of them will buy radios," he said, "but they don't give much thought to proper food preservation."

### Public Utility Has No Carrying Charges

Kelvinator outlet is the Southern Utilities Co., and Paul Linville is sales manager. He explained that while the company makes no carrying charge and gives 24 months to pay on refrigerators, it gives five per cent discount for cash—which in one sense makes a five per cent carrying charge on time payments. After the one-year guarantee is up, new parts are charged for, but labor is free on refrigerators sold by the utility.

Two full-time salesmen work outside on refrigeration, and several other employees do part-time selling. The company does not handle commercial, and has a policy against putting household refrigerators out on free trial.

The dealers we saw in Winston-Salem all had nice things to say about the News. At the G-E store, Mr. Wilson had just ordered a 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK. Mr. Clinard had just mailed in a subscription to the paper, and C. B. Tyson, supervisor from Westinghouse Electric Supply Co. in Charlotte, came in while we were talking to Mr. Clinard and ordered both a subscription and a copy of the new DIRECTORY. Mr. Dixson ordered another subscription, and we found the News on top of Mr. Linville's desk at the utility.

### Mocksville, N.C.

Mrs. R. L. Lyerly was tidying up the branch office of the Southern Public Utilities Co. in Mocksville, N. C., when we stopped there. Her husband, the manager, was out.

Mocksville, she told us, is a town of retired farmers—population 1,800.

Evidently, Mr. Lyerly expects his Kelvinator business to be comparatively good this season. In the past two or three years, he has sold a total of 15 refrigerators. This year he has already sold five, and reported to his wife that "that was only a start."

Clinard Electric Co., headed by B.

We were a little surprised when we heard that while Kelvinator installations by the utility branch totaled only 15 up to Jan. 1 of this year, 45 electric ranges had been sold.

"That's because Sanford's store (up the block a way) sells General Electric," Mr. Lyerly explained. "There are several Sanford boys here, and they just about own the town—most of the buildings, a garage, grocery store, and ready-to-wear store—so whenever any of the employees in those places want an electric refrigerator, they buy from their bosses."

### Hickory, N.C.

Hickory, N. C., is the sash cord center of the world. It has 15,000 people and four refrigeration dealerships—Fuller Furniture Co., Norge; Wagener Furniture Co., Crosley; Kelvinator, Southern Public Utilities Co.; and Shuford Hardware Co., Frigidaire.

We stopped at the last-named, met W. B. Miller, salesman, learned that the store handled Westinghouse, too, last year, but dropped it because the management felt proper promotion and display couldn't be given two lines.

Refrigeration sales have been much better this year than last. Only trouble is that 4- and 5-cu. ft. models comprise the bulk of the sales, and Shuford hasn't been able to get delivery on them.

"We do most of our selling outside of Hickory," said Mr. Miller, "among the mill workers in nearby villages, where salesmen of the utility company don't go very often. We can't compete against them here in town, because of their free-service no-carrying-charge proposition (same as in Winston-Salem)."

### Asheville, N.C.

Chief assets of Asheville, N. C., are its mountain scenery, warm days, and cool nights. Tourists and health-seekers are the backbone of its livelihood, so as business goes in other parts in the country, so Asheville goes, feeling each economic rise and fall about six months after they have hit other localities.

All this has its effect on the buying seasons there. Take refrigeration, for instance. Although refrigerator dealers put on campaigns in the spring, and look to pre-summer months for a good volume of business, they don't ease off in sales effort in the fall as retailers in many other cities are inclined to do.

That is because proprietors of the varied establishments catering to tourist trade are wont to make purchases for themselves only after they have counted up their takings from the summer season. So considerable money is spent by townfolks in September and October, and refrigerator dealers find them profitable months.

While general business activity has been somewhat improved this spring, it hasn't been anything remarkable. Prospects are good, however, for a busy tourist summer, and the town's several rayon, blanket, and woolen mills are working on fair schedules.

### Dealer Association Went Flooie

At the Dunham Music House, we found Proprietor H. A. Dunham back at his desk after a fortnight out of town. His store had Norge and Grunow last year, but the latter line has been moved over to the Sterchi Bros. furniture store this season. Dunham replaced it with Stewart-Warner.

He reported that while general business of the store has picked up this year, refrigeration sales are no better than last, said he thought they would improve, though, as the summer advances.

"Is there a dealers' association here?"

"Well, there was, but it went flooie," he said, and that was about all we could learn from him on that subject. We got the whole story later that morning.

The association was formed early in 1932 to do away with ice box trade-ins and no-down-payment deals, and standardize initial payments and carrying charges. All local dealers fell in line, W. J. Reusing, Frigidaire dealer, was elected president, and some real progress was made during the summer in cleaning up the business there.

But in the fall, someone at the Frigidaire factory or in the distributorship serving the Asheville dealer decided Frigidaires weren't being sold quite fast enough there. So the Bonmarche department store was signed up to handle Frigidaire on the meter plan—25 cents a day. Frigidaire Dealer Reusing was given a little over-ride on sales made by the department store, but he was not responsible for the latter's taking on Frigidaire or using meters.

Almost immediately things started happening. Sterchi Bros., handling Sparton then, dropped to less-than-

\$10 down payments. The Dunham store started using meters on Majestic and Norge, but stopped it in a few weeks. And the utility company, which had gone to a 6 per cent carrying charge when the association was formed, went back to its original charge of 4 per cent. The association finally broke up altogether.

Dealers wish someone would revive the old organization. They liked it. But Mr. Reusing, who is now head of the Asheville retail merchants' association, feels he shouldn't take the lead in that direction, considering his position in the first breakup. Incidentally, the department store doesn't handle refrigerators anymore.

### Prospects Look at Sears & Ward's Refrigerators

Reusing Light & Refrigerating Co. is the name of the Frigidaire dealership. One of the men we met there was L. D. Addington, assistant manager. Some of his remarks were:

"We had the best April in our five-year history. Two things caused it, we think. First was the general business improvement and optimistic frame of mind people are in. Second was Frigidaire's Seth Parker broadcasts. Those programs have literally packed our store on some days."

"One thing we've noticed this year for the first time is that a lot of refrigerator prospects are going over to Sears Roebuck and Montgomery Ward to have a look at their refrigerators. That indicates to us that folks are getting so sold on the reliability of electric refrigeration in general that they are no longer afraid of any make. Mail order houses aren't taking many sales away from us, however; apparently many people go there just to look for a price."

"Owners of tourist homes are excellent refrigeration prospects, but selling to them is a touchy proposition sometimes, because if they have a poor summer season, they may not be able to continue their payments in the fall."

When we talked to Mr. Reusing, we found he is giving much thought these days to companion appliances, feels that he should be taking on something to sell when refrigeration isn't moving so fast. Radio he doesn't want. Air conditioning isn't profitable yet. Oil furnaces may be the answer, he thinks.

### Utility & Reusing Co. Total 3,700 Sales

J. G. Richards, sales manager of the Carolina Power & Light Co., said that the utility's sales of General Electric and Kelvinator refrigerators in Asheville have been under last year in unit volume, but over '33 in dollar volume. Kelvinator sold two-to-one over G-E last season, but the two lines are running about even now. Price raises have held down the number of sales this year, in this man's opinion, and he expects total '34 sales to be around 300-46 under last year.

The company makes no allowances on old ice boxes, requires that a down payment be made on all sales, has a 4 per cent carrying charge, and does not charge for service (labor) on the refrigerators it sells if parts costing \$5 or more are needed.

There are 10,000 wired homes in Asheville, population of which is 50,000. Four thousand electric refrigerators are installed in those homes, and of that number, Mr. Richards estimates that his company has sold 2,000 and the Reusing company 1,700.

He regretted the fact that prospects this year are doing much dickering over ice box allowances, and that some dealers in town are making free trial installations.

New feature of the utility's sales room is a General Electric kitchen. When we were there, plans were being made to give it a first promotional boost by having a Madame Serrec, brought to Asheville by a newspaper to conduct a "health and charm" school, hold one of her sessions in the kitchen.

### Lexington, Ky.

Stopped briefly in Lexington, Ky., a city which is just beginning to get back on its feet as the market for fine race horses opens up. On all sides of it are large stock farms which did none too well during the last few years. Tobacco growing is the other mainstay of the city, but money from that business doesn't get into town until after the crops have been sold in the fall.

### G-E Commercial Unit Business Strong

K. F. Stutz, sales manager of the Sterling Hardware Co., handling General Electric appliances, told us his store's refrigerator business this year has tripled last season's. He claimed that his men have made 90 per cent of all the commercial installations in

Lexington since the first of the year, General Electric-Russ beer coolers and meat market equipment comprising the bulk of the sales.

Ice box trade-ins have been quite a factor there this spring, and the Purcell department store has made itself felt with its selling of Crosley and Stewart-Warner on the meter plan. The Lexington Utilities Co. handles Westinghouse, and Mr. Stutz had nothing but good things to say about it.

One of his remarks: "About 10 per cent of all our sales are made to owners of other G-E appliances."

### Norge Dealer Relies On Walk-in Traffic

Whereas this store depends upon outside salesmen for the great bulk of its business, the Norge dealership a few blocks up the street relies almost altogether on walk-in traffic for its refrigeration sales. It is the Leet Bros. furniture store.

Its sales this year have been no better than last, and H. H. Leet attributes that to spring's late arrival, and the fact that due to the nature of its income sources, Lexington generally doesn't feel an economic pickup until six months after it has reached other parts of the country.

"Last year," he told us, "75 per cent of our refrigerator sales were for cash. That was because the poorer classes couldn't buy at all, while the ones who did buy were those who still had a nest egg left from the last boom. Standard models have far out-sold deluxe jobs this season."

"Some of the best prospects we have now are not, strictly speaking, residents of Lexington, because most of the homes built here during the last few years have been erected outside the city limits."

### Meter Plans, Price Raises Hurt Frigidaire Sales

C. F. Glenn of Glenn & Co., Inc., Frigidaire dealer in Lexington, isn't so happy about the refrigeration business right now. Meter competition, no-down-payment plans, and free-trial offers by some other local dealers are giving him cause for worry.

Then too, the local gas company, which sells gas at 60 cents per 1,000 cu. ft., has been doing considerable advertising lately along lines of "You can operate an Electrolux for two cents a day," and that is having its effect on the market, said Mr. Glenn. Recent Frigidaire price raises have slowed up his sales, too.

The Glenn company offers three-year service on its refrigerators for an extra \$18, but most buyers don't take advantage of it, he said. That's too much to ask with prices going up as they now are, was his comment.

### Crosley's 500,000 Watt WLW Inspected

Heading north toward Detroit about 10 o'clock the night of May 12, we stopped at Crosley Radio Corp.'s WLW studios in Cincinnati, were taken through them by Antoinette Werner West, who acts as hostess and makes a couple of broadcasts every week.

D. R. Neil, master control engineer at the studios, showed us how programs originating in or out of the studios are regulated there, and then sent out to the transmitter at Mason, O. for broadcasting. He remarked that engineers at the studios not only must know that business, but to do a first-class job, must be telegraphers and musicians, too. They must know how to operate a telegraph system, because that is the means of communication between the studios and transmitting station, and they must know something about music if they are to regulate program volume properly.

An hour later we were out at the new Crosley 500,000-watt transmitter near Mason, having its wonders explained to us by Engineer R. S. Duncan.

We were interested in learning that programs from the studios first pass through the old 50,000-watt transmitter, then are amplified by going through the new apparatus which steps the station up to 500,000 watts.

Simply by pushing one button, all parts of the transmitter are placed in operation, automatic relays taking care of this. The giant tubes must be warmed 45 minutes each morning before the station can go on the air. An automatic relay turns them on each morning, but shuts them off again in 30 minutes, provided no one has come to turn them on manually by that time.

### Frigidaire's Moraine Plant Working Nights

Driving into Dayton after midnight, we saw Frigidaire's Moraine plant all lighted up, apparently going full blast, and learned from Publicity Director Jim Irwin the next morning that both Frigidaire factories are working on a 24-hour, six-days-a-week schedule.

**FAIRBANKS-MORSE**



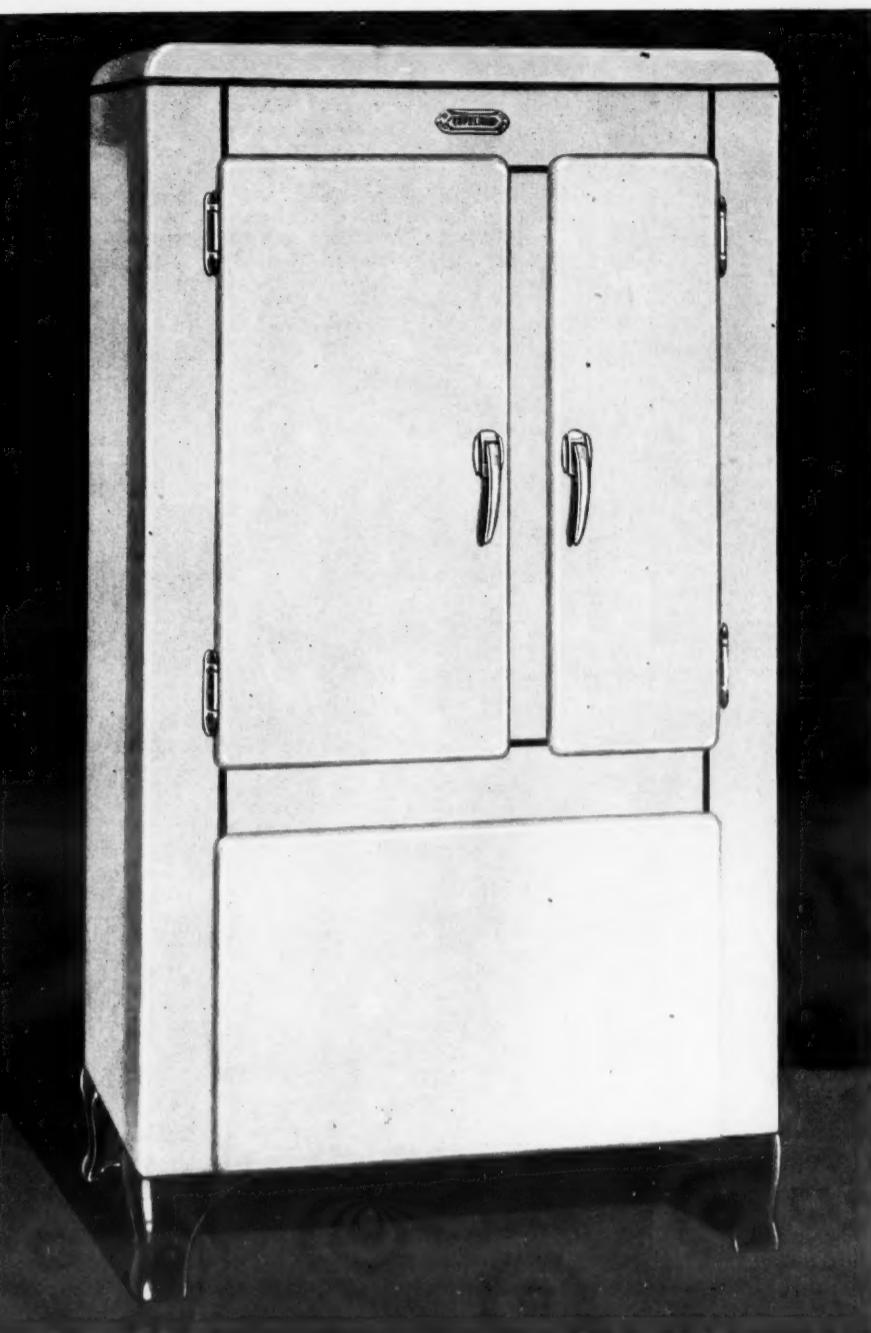
## For Reasons Every Dealer and Distributor Will Appreciate . . .

We bring to the electrical refrigerator industry—engineering. We bring 104 years of experience in the design and production of precision machinery. From the laboratory scale which weighs a pencil mark to the giant Diesel Engine which drives an ocean vessel—the soundness of Fairbanks-Morse engineering and integrity of manufacture have become world tradition.

The Electrical Refrigerator which now bears the historic F-M trade-mark is in keeping with the Fairbanks-Morse tradition. We bring also to the industry a sound dealer-distributor policy. If our refrigerator business is to prosper, it can only be because our distributors and dealers prosper along with us. We insist that our dealers make money, for in the end, that is the only way that we can profit. Our insistence is backed by the devotion of every means that the vast resources of this organization can provide—to aid our Distributors and Dealers to profit.

We invite the right kind of Dealers and Distributors to participate in this business with us. If you feel that you have facilities of the kind that could profit from such a liberal franchise as we are prepared to offer, we ask you to write or wire us at once.

Many Dealers and Distributors have also seen the advantages of carrying our full line of Electrical Refrigerators—Radios—Washing Machines—Ironers. Address Audiola Radio Company, 430 S. Green St., Chicago, Ill., Subsidiary Fairbanks, Morse & Co.



# What are you doing at Copeland?

*Only a few months ago this question was in the mouths and on the minds  
of everyone concerned in this great industry*

Distributors, dealers, service-men, parts manufacturers and friendly competitors were concerned as to the future of Copeland. They acknowledged that should Copeland not remain in production a loss beyond computation would inure to the entire refrigeration world as well as to the people, ultimate buyers, who really make possible the continued existence of every corporate body, from the largest to the smallest.

To these inquiries we issued a statement of policy in which the new Copeland Refrigeration Corporation affirmed its deliberate and definite intention to make Copeland once again a household word wherever refrigeration was mentioned; to take care of and to service all Copeland

units wherever found, and to carry on the Copeland tradition of supplying the BEST in electric refrigeration.

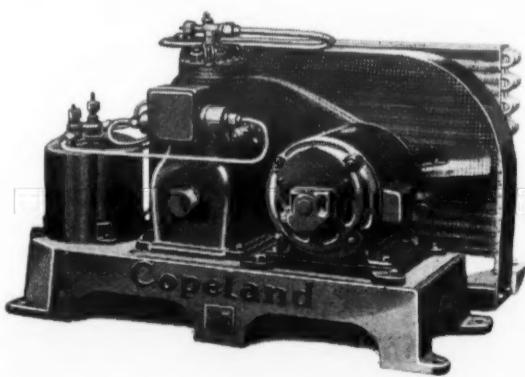
Fortified with ample money, staffed with veterans of the refrigeration business, and backed by the loyal support of distributors and dealers everywhere, Copeland has made good every promise set forth in this statement of policy.

Seven beautiful Domestic Refrigerators were placed in production; Twenty-one Commercial Condensing Units were standardized and due notice was given to the industry. The results have been amazing; beyond even our fondest hopes.

From every corner of the land, and from foreign countries also, orders for Copeland

equipment have rolled in, making our mammoth factory a beehive of industry. Public appreciation of their beauty, simplicity, economy and dependability has crystallized into a general rush of orders for the products of Copeland, which we are able to fill without delay or inconvenience.

The Copeland management affirms and repeats the message of January last; Copeland is an integral part of the great business of supplying dependable electric refrigeration. It has ample resources for every present and anticipated need. It has a policy of fair dealing with its co-workers. Its basic principle is to supply the maximum in refrigeration values and to this end it pledges all its resources, its interest and its singleness of purpose.



*Right-thinking, aggressive merchandisers competent to distribute Copeland merchandise will find a proposition well worth their consideration by communicating with us NOW.*

**COPELAND REFRIGERATION  
CORPORATION**  
Mount Clemens, Mich.



# Copeland

DEPENDABLE ELECTRIC REFRIGERATION

**BY G. F. T.**

### THREE Gentlemen From Australia

F. M. COCKRELL says that one of the troubles with the publishing business is that you can't service the product. If a faulty refrigerator is delivered to a customer, a service man can be sent out to put it in working order. But if a mistake is printed in a paper and mailed out to subscribers, there's nothing can be done about it.

And is our face red this week!

On this page of the May 23 issue of ELECTRIC REFRIGERATION NEWS we ran a story about "Two Gentlemen from Australia." Well, it seems we were all wrong. There were THREE gentlemen from Australia. The first two came together. It was about them and their company that the story was written. The third man, representing a different concern, dropped in later (when we were out) and left his card.

That card got us into a helluva mess. We found it, put it among our notes on Australia, and used it when it came time to write the story. So Mr. McCullagh became Mr. Queale, and the Electricity Meter Mfg. Co., Ltd., became Mechanical Products, Ltd.

Here are the real facts in the case: A. A. McCULLAGH is engineer for Electricity Meter Mfg. Co., Ltd., which manufactures ElectrICE refrigerators in Australia.

R. J. W. KENNELL is manager of a radio factory associated with Electricity Meter Mfg. Co.

WILLIAM QUEALE (known in Australia as "Big Bill" Queale) is managing director of Mechanical Products, Ltd., which is the Kelvinator distributor in South Australia.

In addition to manufacturing ElectrICE refrigerators, Electricity Meter Mfg. Co. has acquired certain rights for manufacturing Kelvinator and Leonard equipment.

We hope that straightens everything out. And we are duly contrite.

### Eating, Sleeping, and Mike Fritzel

Last year we published a lengthy report on hotels and restaurants in Chicago, to serve as a guide to Fair visitors. Complaints came in that our check list was no guide at all, that there were so many spots listed that those unacquainted with Chicago didn't know which way to turn.

Okay, stranger, this year we'll tell you where to go. Or rather, where the INDUSTRY goes. We know our way around over there a little better now, and can save you a bunch of time by indicating the few places that really seem to count.

Of course you'll come to see the Fair. But you can't sleep there, and you probably won't want to eat there much. So you'll want to know where refrigeration men eat and sleep while in Chicago. First, the sleeping:

Electrical men generally stop at the Palmer House. By "electrical men" we mean public utility executives, and old-line manufacturers of electrical appliances, like General Electric and Westinghouse.

The radio crowd (manufacturers and distributors of radios who are now in the refrigeration business, too) may be found at the Stevens, with the Congress handling the overflow. Gas industry men—including Electrolux—also check in at the Stevens.

Frigidaire headquarters (unofficial) is the Knickerbocker.

Grunow headquarters (official) is the Lake Shore Athletic Club.

The very biggest shots—financiers and top executives—put up at the Drake—which is our idea of a fine hotel.

All these hotels are highly recommended. Prices for a single room are \$4.00 and upward. If you stay at some of the others this summer, you'll probably find yourself in the midst of the Sioux Falls Drum and Bugle Corps, the North Forks Rotary Club, American Legion Post No. 999, and the Amalgamated Mothers of Shay's Rebellion—all shouting "Where's Elmer?"

For really peaceful sleep, travel northward to the Edgewater Beach, or southward to the Southmoor.

Now as to the eating:

There are really only two places to go, if you would see fellow-members of the industry, the Empire Room of the Palmer House, and the Chez Paree. The Chez Paree doesn't serve lunch, and the Palmer House doesn't stay open late; so the usual procedure is to lunch at the Palmer House, and have dinner or supper at the Chez Paree.

We've been meaning to mention the Chez Paree for a long time in this column, but somehow haven't got

around to it until now. It is one of the most unusual restaurants in the country, because it caters chiefly to business executives.

At one time or another we've seen dining there the chief executives (including presidents, vice presidents, sales managers, advertising managers, and junior officials) of every refrigeration manufacturer in the Nema group—except GEORGE MASON and GEOFF JOHNSTON. Probably they've been there, too.

Chicago organizations, like Stewart-Warner, Grunow, Majestic (before its demise), R. Cooper Jr., and others entertain both small and large groups there regularly.

Reason for its popularity are excellent food, good entertainment (Morton Downey is there now, and music is furnished by Henry Busse—a Batten, Barton, Durstine & Osborne orchestra), and MIKE FRITZEL.

Mr. Fritzel is a substantial businessman in his own right, and has been a restaurant operator catering to business men in Chicago for so long that inveterate travelers like JOHN KNAPP, JUD SAYRE, P. B. ZIMMERMAN, WALTER DAILY, R. E. DENSMORE, RAY COSGROVE, EARL DOTY, JOHN WYLIE, BILL GRUNOW, and countless others consider the genial "Mike" as one of their best friends, and keep in touch with him regularly. He's a grand personality.

There's no place in the country which is so widely known as an industry hang-out. It's swell for a reporter—go down there, and sooner or later everybody of any importance will show up, ready and even anxious to talk. Dinner is \$2.50 per plate.

### Vivid Panorama of Electrical Progress

Revealing the panorama of electrical progress, its past, present, and the outlines of its future, the exhibit of the Westinghouse Electric & Mfg. Co. in the southern hall of the Hall of Electricity presents a complete view of events that comprise the march of electrical progress.

The exhibit has been so designed and arranged as to make understandable to the average man many of the fascinating intricacies of modern electrical facilities while also revealing to the technically minded engineering achievements of international significance.

Exhibits demonstrating the generation and distribution of electricity, its control, its application to the home, and to transportation and industry, in its various phases are joined with research laboratory developments to provide a comprehensive appreciation of the contributions made by Westinghouse to electrical progress.

A part of the Westinghouse exhibit includes a bank of 400 different lamps providing an opportunity for the public to see how many kinds of lamps it is possible to obtain for lighting service. This display includes a replica of a 100-kw. lamp, so large that a medium sized girl could stand inside it and whose filaments are the same size as a lead pencil. Contrasted to this monster lamp is a grain-of-wheat lamp, tiniest in the world and useful for surgical work.

Westinghouse is exhibiting all its air-conditioning units which fill the requirements of the smallest apartment to the largest commercial establishment. These units will be in operation to show how they circulate, cool, clean, and dehumidify in summer and circulate, clean, heat, and humidify in winter. Sufficient air-conditioning equipment has been installed to make the Westinghouse exhibit one of the most comfortable at the Fair.

Operating conditions are most severe for this equipment because it is operating in the open spaces with an outdoor temperature which may go as high as 100° F. That temperature will be dropped to 65° F. at the point where it leaves the conditioner, the air being cleaned and excessive moisture removed as it passes through the condenser.

It is estimated that the equipment being installed in the Westinghouse theater telling the drama of the electric household will provide 180,000 cu. ft. of conditioned air every hour from which there will be removed approximately 4 gals. of water.

The exhibit office and reception room, also the model of the largest transformer, the inside of which was developed for a "black light" room, are air conditioned. These rooms demonstrate how much more liveable such enclosures can be made with air-conditioning machinery.

The units displayed show quite a few of the variations available, the home and commercial types with various finishes, including walnut, mahogany, and the moderne type. They also demonstrate the ease of installation and the units required for different operating conditions.

Six room coolers are in operation. Self-contained and requiring no permanent connection, being portable and mounted on casters with various finishes, visitors may move them about, start and stop them, as they would in their own homes.

There is in operation sufficient

Westinghouse air-conditioning equipment to supply 837,000 cu. ft. of conditioned air an hour under normal operating conditions. There is sufficient additional equipment on display to double the capacity. Some of the equipment consists of cutaway sections showing the operating mechanism, filters, sprays, etc.

Other major parts of the Westinghouse exhibit include an operating model of the water wheel generator under glass in the floor, a triode demonstrator to show the principles of the thermionic tube, an igniton tube welding display, lightning arresters, Slepian's electric switch circuit breaker, a synthetic steam turbine, use of electricity in railway, marine, and air transportation, demonstration of "black light," transmission of power by radio, photo-electric cells, vertical parking devices, magnetic strain gauge, "electric taster," radio control beams, and several other novel exhibits demonstrating uses of electricity.

### The Drama of Electrical Living

Six scenes that tell the drama of electrical living are being presented on a revolving stage in the Westinghouse Little Theater of the Home, located in the Hall of Electricity. The theater is a new feature this year in the display of the Westinghouse Electric & Mfg. Co. in the Hall of Electricity. The theater, which is air conditioned, seats approximately 150 people. Presentations of the show are given every 15 minutes throughout the period of the day the exhibit is open.

With but a quarter-hour available for complete performances, special equipment had to be developed in order that the different scenes could be staged without loss of time. That problem was solved with a revolving stage, which has five prepared sets on it.

These are presented to the audience, one after the other with only 12 seconds required for scene shifting. The same setting is used for the first and last scene thereby permitting the showing of six scenes with five sets.

The stage is 22 ft. in circumference and its five scenes are wedge-shaped, just as though the stage were a pie cut into five sections. The scenes fit into an apron at the front. One actress carries the full dramatic load and she, as the stage revolves, steps through a door, from one scene to another, thus preserving continuity of action.

### A Preview of the 1934 World's Fair

A control board is placed on the apron, from which an operator shifts scenes, controls lighting, operates a large clock, which provides a part of the dramatic action and times the show. Time saved electrically is the essence of the Westinghouse drama.

The first scene of the story opens in an ordinary living room. The setting includes a chaise lounge, a table, window and other conventional fixtures. Illumination is provided by an oil lamp and candles. Here is seen a day that is past, when illumination in rooms was a good deal less than perfect.

The scene then changes to that of an old fashioned kitchen in daylight. "Props" consist of an ice-box, a gas range, a kitchen sink (with plumbing exposed) and an ordinary kitchen table. Here the story is told of the physical labor required by the badly designed and equipped kitchen.

Next scene is that of an old-fashioned laundry. Its walls are white-washed; there are tubs with washboards; the ceiling is unplastered. Gas is used to heat irons and there is an unstable ironing board. Clothes are kept in an untidy hamper with a chair used to supplement it. Lighting is provided by a drop cord with unshaded lamp. Again is depicted a story of exertion.

This scene rolls on. It is followed by one showing the modern electric laundry, where engineering has changed the manner of installing appliances from the haphazard method of a former day to one where the function of each unit blends logically into that of another. This laundry is correctly illuminated. There are no shadows. Electrical equipment for washing, for ironing, for heating, and for all the other tasks of the wash day are installed.

Again the scene turns. The audience now sees a modern all-electric kitchen. As in the laundry electrical equipment has been not only designed to do its work properly but also it has been correctly installed in relation to other units of the kitchen so that work may be done efficiently. The same principle as that applied in the manufacturing aisles of large establishments, "straight line production" is exemplified in this scene.

The electric range and refrigerator, electric dishwasher, with other smaller appliances, its convenient and well

illuminated cupboards all present the picture of the kitchen that women can have today.

As the next scene comes to view, the last of the drama, the living room is returned, this time correctly illuminated. There is an electric table lamp for reading, overhead lights for general room illumination, even side lighting for the window, to demonstrate the transformation that can be made in a room with adequate lighting.

### 'House of Magic'

Reversing the order of the old "wild west," scientists in General Electric's 1934 "House of Magic" in the Electrical building are using a gun to "shoot on" the lights instead of shooting them out. A full-size gun that shoots bullets of light instead of lead or steel is one of the new features of the popular science show.

Instead of the customary cartridge, a small incandescent lamp with concentrated filament is built into the gun. A pull on the trigger throws a switch that flashes a short but intense beam of light from the barrel of the gun, and the "light bullet" registers a hit on a photoelectric target when the operator's aim is good.

Special lenses and the unusual optical systems installed in the gun barrel make it a highly accurate "light arm."

The "voice of the atom" is another of the new features in the series of scientific experiments presented in the company's little air-conditioned theatre in the Electrical building. In this experiment a device known to science as the Geiger counter detects the presence of radio-active materials, and the disintegration of atoms in either uranium or radium is recorded by loud pops in a loud speaker.

This demonstration also shows how effectively lead will muffle the voice of the atom from these radioactive materials.

Demonstrations of the action of ultra-violet light on various materials comprises another part of the show. Apparently consistent with the name "House of Magic," the invisible rays are used to make invisible colors visible to the audience, while colors and designs plainly visible under ordinary light completely disappear under the ultra-violet light only.

Carrying the scientific demonstration idea farther than last year, General Electric is introducing a new method of displaying its finished products.

In each section of the exhibit, which will become a series of demonstration rooms with moderate seating capacity, lecturers demonstrate some experiment in pure science which was the forerunner of the modern electrical device.

Laboratory developments in the field of air conditioning, for example, are shown in their relation to the modern heating, cooling, and air-conditioning devices which the company manufactures.

In addition to the scientific lectures on electrical kitchen equipment, a cooking school, with three full classes per day, has been established, with home economists in charge, also installed are two complete all-electric kitchens and an all-electric laundry.

Another Ford feature is the "Roads of the World." Duplicates of 19 types of roads which have been built in various lands, in both ancient and modern times, have been laid.

The world's largest model of an automobile is being exhibited by Studebaker. This gigantic automobile, measuring 29 ft. high, 30 ft. wide, and 90 ft. from bumper to bumper, is modeled after the Studebaker "land cruiser" which made its bow at the automobile shows.

Within its body is an auditorium capable of seating 80 people. Sound films are shown in this theater.

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### Relaxation

For the visitor to the Fair who has had his fill of culture and science and who seeks relaxation in entertainment there will be the Midway (minus Shelly Rand to be sure) and a variety of free entertainment.

There are 51 new concessions at the Fair this year, and 65 new concessions (the word "concession" being used by Fair officials to designate any sort of show, game, ride, etc.).

One of the new features among the variety of entertainment offered is the Hawaiian play spot, which has taken over the site occupied last year by the A. & P. carnival.

The volcano Mauna Kea forms a background for the Hawaiian exhibit. Mauna Kea goes haywire five or six times daily and expresses itself with sound and pyrotechnic effects calculated to chill the blood. Beautiful Polynesian maidens and typical Hawaiian music round out this exhibit's attractions.

Free entertainment projects have been distributed carefully throughout the Fair layout. Near the south end of the Fair is the amphitheater of the Standard Oil Co. At about 28th St. to 31st St. is Ford Park, where free concerts will be presented daily, and from the Swift & Co. 23rd St. bridge two concerts daily will be presented for 10 weeks, starting on July 1. Free entertainment and free dancing will be given on the pier in front of the aquatic grand stand near the north end of the lagoon.

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days have been scientifically eliminated, and how the modern car has riding comfort, greater efficiency and less wear and tear through the development and use of better lubricants.

Borg-Warner Corp. has elaborated its exhibit showing that organization's contributions to automobile manufacture. Last year's exhibit has been entirely remodeled with new features added.

### Automobile Show

One of the outstanding features of the World's Fair of 1934 is the super-automobile show. The Big Three among the motor car manufacturers—General Motors, Ford, and Chrysler—all have their own buildings. Studebaker, Hupp, and Nash have elaborate exhibits. Mack Truck and International Harvester show trucks. Firestone, Goodyear, and U. S. Rubber are participating. Firestone has erected an extensive addition to its buildings. Scores of manufacturers of automotive parts and equipment complete the picture.

General Motors is featuring the "20 firsts" in invention and development which General Motors has contributed to the development of the modern motor car.

Among these are the self-starter, Duco finish, crankcase ventilation, ethyl gasoline, electric headlighting and battery ignition, syncro-mesh transmission, knee-action, the one-piece spark plug shell, tilt-beam headlights, cellular type radiator, V-type fan belt, four-wheel brakes, harmonic balancer, thermo-control water cooling, balanced crankshafts, engine-driven fuel pump, silent poppet valve mechanism, carburetor intake silencer, and automatic choke.

The Chevrolet assembly line, one of the big attractions last year, is being repeated. A new feature of the G-M exhibit is the research room—completely air conditioned and sound proofed.

Visitors enter this room through a system of double doors to find a display of amazing and novel scientific instruments used in the work of making a modern motor car.

The main building of the Ford exhibit, 900 ft. long, is one of the greatest structures ever built in the world for exposition purposes. It includes more than 100 miles of electric wiring and employs 225 motors.

For lighting and power the Ford exhibit uses more than one-third as much current as was used by the entire World's Fair in 1933.

More than 8,000 Ford agencies backed up by 90,000 dealers and their employees are acting as information and recruiting agencies to "sell" the public on attending the World's Fair.

HENRY FORD has brought his famous Ford Museum to Chicago. This includes every type of wheeled vehicle from the first application of the wheel, through Roman chariots and jolting carts and covered wagons up to and including the modern Ford V-8.

Another Ford feature is the "Roads of the World." Duplicates of 19 types of roads which have been built in various lands, in both ancient and modern times, have been laid.

## Caswell Uses College Graduates As Retail Salesmen

(Concluded from Page 1, Column 4) the seven college graduates employed made at least one sale during the first week they worked and in the second week they all closed at least one order and some of them made three sales.

The experiment is being conducted by Frank M. Buten, sales manager of the Detroit retail division. Mr. Buten, who has one daughter who has just been graduated from the University of Michigan and another who is in her third year on the Ann Arbor campus, got the idea of hiring college-trained men after he had listened to the hard-luck stories of a number of his daughters' friends. Many college graduates, he discovered, were either hard pressed for work or were engaged in some routine and monotonous task which offered little in the way of remuneration or future possibilities.

At the same time he discovered that most of the college men he met were alert, aggressive, and equipped with well-trained minds. He began to ruminate on the possibility of applying their abilities to one of his major problems—finding sales personnel who could present the story of the all-electric kitchen, who could be truthfully called "kitchen counsellors" and not mere doorbell-ringers.

### Advertised for College Men

Mr. Buten decided to give the idea a try so he inserted advertisements in the classified section of the newspapers calling for college graduates only.

The response to the advertisements kept Mr. Buten busy for a couple of days interviewing applicants. From those applying he selected eight men, one of whom has since dropped out of the organization.

Of the seven remaining college graduates, two had majored in education and had teaching certificates, one had been graduated in electrical engineering, one in pharmacy, and three others—so far as Mr. Buten determined—had taken general courses.

"Most of those who applied approached me without much enthusiasm," Mr. Buten declared. "Practically all of them asked right off—'Is it house-to-house canvassing? I wouldn't want to do that.'"

### Sold Them on Job

"My job was to show them that their job was more than mere doorbell ringing—that it was an opportunity for them to help raise the standard of living by spreading the story of the benefits of modern electrical appliances to all kinds and classes of people."

"Many students are graduated from college with a set of ideals about the world and their work which the workaday world tends to laugh at. But I appealed to this idealism in pointing out the service that they could render by getting labor-saving and money-saving devices into the home. After they saw some of the records and studies which we use they became quite enthusiastic about the idea."

### Show Aptitude for Training

The college-trained salesmen, in addition to their successful start, are also showing their aptitude for the work by the manner in which they are wading through the La Salle Extension university course on home appliance selling which all Caswell salesmen take. According to Mr. Buten the college graduates are showing the results of minds trained to study, as they are all making high marks in this course.

"I believe that the college man has a real place as a retail salesman in an organization with a balanced line of merchandise and which is trying to sell something like all-electric kitchens, requiring continuity of effort," Mr. Buten declared.

"The oldtime 'high pressure' salesman who put everything into a one-time effort to make a single sale doesn't fit into the all-electric kitchen program so well. We have prepared elaborate sales portfolios and presentation booklets, but many salesmen either mistake the portfolio as a substitute for brains or disregard it altogether because they can't learn how to use it."

### Can Use Presentation Material

"It takes considerable thought and patience to interpret sales presentation material to a housewife so that she can visualize what the installation of new appliances will mean to her. That's why we're trying to hire men who can assimilate the type of training that will justify their being called 'kitchen counsellors.'

Specialty selling, especially the canvassing end of it, has received a bad name because of the type of treatment to which some salesmen are subjected, Caswell's retail sales manager points out. One of the things that the college graduates applying for jobs feared was the manner in which they would be "received" by prospects who opened the door in answer to their knock.

"I explained to them that if they

took the attitude that they were trying to do the prospect a service, and that the prospect by refusing to listen to their story was hurting himself, they could leave the person who shut them out without feeling that they had suffered any indignity," Mr. Buten declared.

Retail operations by Caswell in Detroit are divided into five divisions, on a geographical basis. Each branch is further split up into eight zones, this zoning being done on the basis of the Curtis Publishing Co. plan. It has been found, Mr. Buten explains, that where one out of two families read the *Saturday Evening Post*, the same proportion has bought or will buy electric refrigeration.

Thus, if in one zone it is found that one out of two families read the *Saturday Evening Post* and in another that one out of seven families read the *Post*, the latter zone will have to be larger in order for it to present market possibilities as great as the former.

Each division has its own store and a divisional manager. One salesman handles each zone and the men work a rotating shift on the branch store floor.

Salesmen are given full protection on their territory. Caswell operates a big display room in downtown Detroit and has another large showroom at its main offices which are near the "New Center" district, a considerable ways out of the downtown district.

No matter where the sale is made, the salesman gets full commission if the purchaser resides in his territory. According to Mr. Buten, the salesman's worth is predicated as much upon his daily survey sheets (which

shows how many calls and demonstrations he has made) as upon his actual sales. The zone salesman is thus more apt to do a good job in the matter of getting the story of G-E appliances to people in their territory.

"The college graduates, after they were hired, were sent out to work under the direction of a divisional manager as junior salesmen." Mr. Buten said, "After they had demonstrated their capabilities as appliance salesmen they were sent out on their own and each is now a zone salesman with his own protected territory."

## Moock Electric Wins Westinghouse Contest

MANSFIELD—Moock Electric Supply Co. of Canton, Akron, and Youngstown, won the national "Going-To-Town" refrigeration sales contest

sponsored by the refrigeration department of Westinghouse Electric & Mfg. Co., and which ended May 19. The Moock organization made 419.6 per cent of quota during the contest.

Running second to the winners was the VanZandt Supply Co. of Huntington, W. Va., with 405.6 per cent of quota.

Five distributors gave the pacemakers in the contest a run for their money by piling up percentages of more than 300 per cent of their quota, and 25 more distributors broke the 200 per cent of quota mark.

The central district, with the Moock Co. setting the pace, led the entire country with 243 per cent of quota for all of its distributors. The southwestern district also went over the 200 mark with a record of 210.2 per cent of quota. Following closely were: the Middle Atlantic district with 191.3; the northwestern district with 184; and the southeastern district with 181 per cent of quota.

## JOE BLOWS HIMSELF TO A NEW SUIT



**GET MORE CASH out of YOUR cold canvassing**

**INSIST**

*It will pay you to insist that Flexible Rubber Trays and Grids be included as standard equipment in all the refrigerators you sell. By so insisting you'll sell more refrigerators—and sell them easier.*

Every day more salesmen are following in the footsteps of Joe and Bill, as pictured above, and like these two wide-awake go-getters, they're making Flexible Rubber Trays and Grids pay them important extra profits.

There's a tremendous market for these modern time and trouble savers. It seems as though everybody knows about them and wants the ice-cube convenience they offer.

For example, more than a million were sold last year alone. And this year 90% of all automatic refrigerators manufactured will be equipped

with them. No wonder they're so easy to sell to present refrigerator owners. And no wonder they're THE feature to stress when trying to make a refrigerator sale to a prospect.

In fact, you can't call a refrigerator really modern unless it's equipped with Flexible Rubber Trays or Grids. That's why you ought to insist that they be included as standard equipment in all the refrigerators you sell.

It's the easiest way imaginable to increase sales and profits. So write to the manufacturer of your refrigerator—or direct to us—for full details.

THE INLAND MANUFACTURING COMPANY, DAYTON, OHIO

## Flexible Rubber Trays and Grids

ICE CUBES • • INSTANTLY • • TRAY TO GLASS

## Leaders in Science, Business, and Education at Sloan Dinner Say Industrial Advances Must Not Be Stopped if Standard of Living Is to Progress

(Continued from Page 1, Column 2)

NBC network, the theme of this dinner was "A Preview of Industrial Progress in the Next Century," and was dedicated to the proposition that a policy of stagnation, of dividing up jobs and work on the basis of the *status quo*, is bound to cause the nation serious trouble, because "progress has just begun."

Program speakers included, in addition to Dr. Frank, Carl Gray, president of the Union Pacific railway; Robert E. Wilson, vice president of the Standard Oil Co. of Indiana; M. H. Aylesworth, president of the National Broadcasting Co.; Arthur G. Compton, Nobel-prize-winning physicist of the University of Chicago; Harvey Wiley Corbett of Corbett, Harrison and Mac Murray; Dr. Morris Fishbein, president of the American Medical Association; and Walter B. Pitkin, professor of psychology at Columbia University and writer of best-selling books.

Lowell Thomas introduced each speaker, and tied up the various speeches into a radio continuity. One of Mr. Thomas' stunts was the tuning in of radio sending stations located in a TWA plane and a cruising automobile.

As soon as the program went off the air, the dinner became more informal. Charles F. Kettering, vice president in charge of research for General Motors Corp., became toastmaster, and called on C. W. Nash as "one of the men who raised me—commercially, technologically, and—I hope—morally."

In a ringing extemporaneous speech, the aged president of Nash Motors declared that "American business men are afraid to stick their necks out for fear somebody will crack down on them."

"Progress in science and industry will not end in the next year, or in the next light year," he concluded.

Others Toastmaster Kettering called on were Cornelius Kelly, president of Anaconda Copper; Sewell Avery, president of Montgomery Ward; General Wood, president of Sears Roebuck, and Alfred P. Sloan, Jr., president of General Motors, and host for the evening.

### Alfred P. Sloan, G-M President, Presents Questions for Discussion

Asked Mr. Sloan:

"What is to be the progress of science and industry during the next decades? Is there any logical reason to assume that progress is to be halted at this particular point in our development?"

"On the contrary, have we not every right to believe that the very progress of the past insures still more progress in the future and at an accelerated rate, if we have the breadth of viewpoint and the knowledge of the facts to manage our affairs properly?"

"Unquestionably, the most fundamental problem before us in this country and, in fact, before the world today, is the question of unemployment. This is true whether that problem be one of cause or effect."

"Is the solution in the acceptance of the principle upon which so many of our national economic policies are today being formulated, that to have more, we must produce less? And now comes an amendment to that principle, that we should continue to produce the old thing—we must not produce new and better things."

"Again, can we even imagine that the solution of this vital problem lies in the arbitrary discrimination of one industry as against another, through

controlling the freedom of the individual to exchange the results of his own labor, according to his own judgment and desires?

"Are we to believe that the amount of useful work to be performed is limited to what it is today and that the problem of unemployment is solved by dividing the amount of work by the number of workers, or are we to believe that the amount of work can be extended, given the proper economic machinery to make that possible?"

"Can we look forward with confidence and conviction that if we turn back to the principles which have made this country what it is, and which we are today discarding; if we eliminate all artificial barriers that have been erected; if we encourage rather than discourage; if we reward rather than penalize, constructive effort in the future, as we have in the past, that we can consolidate and accelerate the processes of natural recovery that we all believe are very definitely in the making throughout the world? What can science and industry contribute to such an objective?"

"The purpose of our discussion this evening, is to deal with this question. Manifestly, the subject is a broad one. A survey of many branches of useful endeavor discloses the fact that great thought and effort is being expended and real progress effected toward what we might call 'bigger and better' things in the not distant future. These things affect all phases of our daily lives; they indicate still broader opportunities ahead; they demonstrate that the world is in no sense finished."

"What we must do is to establish and then to recognize what the possibilities are; what can be done—then to direct our efforts toward that objective. We will not be true to the traditions of our great and wonderful country if we become satisfied with a static position, either in our thinking or in our action."

### C. F. Kettering Cites Need for Further Research

Mr. Kettering declared:

"The whole world is now absorbed in a study of social problems. These problems were brought about largely by the war. The depression has had a lot to do with clarifying science and industry's part in these problems. As to what we do in the future will depend altogether upon how good a perspective we have as to what we know and what we do not know."

"The ultimate aim of all industry, science, government, and sociology is for a better life—better living conditions; better health; better food; better government; better houses; in fact, for better everything. And these can come about only in proportion as our daily routine and activities conform more nearly to nature's laws which we understand so poorly at the present time."

"It is my impression that we are on the eve of things of an entirely different nature than the mere extension, refinement, and development of our present-day scientific knowledge. I feel we have upon us in the immediate future a great change in mental attitudes toward the physical world which would bring into existence new pieces of information which will completely change our scientific viewpoint."

"It is not what we know that is so important. It is what we do not know. Most of what we know can be found in libraries, in the minds of people, and in process as they exist

today. But we have no conception of what a small percentage this is to what there is yet to know."

"As an illustration, we perhaps do not recognize it but everything that ever moved on the earth has been moved by energy which came directly from the sun. Our coal and oil deposits, our forests, our crops, and everything that lives on the earth is simply an energy contribution from the sun."

#### Study Sun's Energy

"We do not know, except in a very superficial way, how the energy which is given out by the sun is transmitted to the earth. We do not know how plants pick up this energy and convert the inanimate carbon dioxide and water into the vital materials so necessary for our existence. This, when understood, will open up an entirely new conception of things that can be done."

"It is not difficult with this information in hand for even the most unimaginative person to predict the propulsion of airplanes by radiated energy with the power plants located on the ground. Nor is it difficult to envision the entire system of aerial transportation which would be unaffected by fog and weather conditions in general."

"Most of this work is being studied today under the name of photo-synthesis—that is, how plants grow. And we have one research which, for want of a better name, we say is trying to find out why the grass is green. We must understand something of these processes of radiated energy before many of the great problems which lie ahead of us can be solved."

#### Lack of Basic Understanding

"So much of our information today does not consist of basic understanding. It is known to us only by definitions. We say we can see through a pane of glass because it is transparent, and yet we do not know the first principle of how light is transmitted through glass."

"We say a copper wire is a conductor of electricity and yet even our best scientists do not know, even in a small way, how electricity passes through one. We rub our hands together; we say they are warmed by the friction, and yet we have no knowledge today of the magnetism of friction."

"We know we have ball bearings, but as to the exact action of lubrication little, if anything is known, and in the commonplace things that are used in the electrical industry, such as magnetism, electric charges, etc., we have only a very superficial knowledge. We know these things exist, however, because we can see the effects of them."

"Each year we discover new things, which a short time ago we did not even know existed. This has been true in the case of food and vitamins and other principles of nutrition. I cannot help but feel that in a very short time we are going to break loose another great piece of basic information which will keep us industrially busy for a great many years to come."

#### Many Things to Do

"I think if we write down as our immediate problem those things with which we are dissatisfied we have a long list of things to do. We can make our cities less noisy; we can take dirt out of the air; we can have air conditioning our houses; we can have television, and an unapproached number of other things."

"Now if we will go ahead and do these things which are evident, to the best of our ability, and still keep an abiding faith in what we know and in what we do not know as having possibilities of great contributions to human welfare, there will be no need to fear the future."

"There are many people who doubt if human progress can continue on its present standards. Still others think that we have to go back to lower standards of living because they see no way out of our present difficulty. There are, however, a substantial number who, knowing something of the development of civilization, do not regard the evidence presented as justifying either a static or a retrograding standard of living."

"Our assemblage around this table, made up of all classes of scientists and industrialists, consists of all of the talents from that group of our American people who do not believe the world is finished, or that we must curtail human effort and desire. But on the other hand we do believe that the only way out of our present difficulty is forward and not backward."

"To those of us who have spent most of our time in experimental and development work failure is a common thing and if we gave up the principle every time an experiment failed we would accomplish nothing. If common sense dictates that our objectives are sound, we must keep on failing

and learning and failing until the objective is obtained."

"Our civilization as a whole is new. This is the first time in the history of the world that such a civilization has been in existence. It in itself is an experiment and just because we have encountered difficulty is no cause for despair. We must find out what is wrong and then remedy it, but we must not give up hope of a better and more secure life."

#### Responsibility for New Things

"Almost every group of human society has been blamed for our difficulty and the group which we represent has come in for a good measure of criticism. Most of this has come from people who do not know, either through the lack of imagination or experience, how to project the future."

"We welcome criticism and are open to suggestions as to how to do our work better. We feel that this depression is just one of the echoes of the great war. Nevertheless it is a reality and everybody must do what he can to help in every way possible to tide over these difficult times."

"We are being told that if we develop new things we must accept the responsibility to see that they are properly used. We cannot accept this proposition. First of all, we do not know when we are developing a new tool of human usefulness, and secondly a mind turned in fact-finding and experimentation does not make either a good politician or a social worker."

"We believe that many of the principles that have been developed in the physical sciences can be used in the study of the social sciences and we stand ready to contribute in any way that we can to this work. In the conception of any new project few people can see its significance, but when difficulties are encountered they always want to turn back."

"Christopher Columbus had exactly this experience with his crew and while he did not reach his objective his bold voyage resulted in a very much more important thing than that which he started out to do."

"This same thing holds good in practically every human undertaking. We must believe both in the integrity of the people and in the motive which drives them on to their new undertaking. We must also have an open-mindedness in dealing with all new problems."

"When Faraday was experimenting on some of his first work in electricity a member of Parliament said 'What use can this ever be?' He replied, 'You may be able to tax electrical apparatus some day.'

#### Progress in Past Year

"This has, we all know, come true. In the short space of time between A Century of Progress of 1933 and tonight, a great many significant steps have been made in all branches of science, industry, and human relationships. These will be discussed by our distinguished guests."

"While no one can predict what the significance may be, we know that these new things have as great a potential at this time as any other great discoveries had in times past, at their inception. Every activity has before itself many great jobs to do."

"Perhaps one of them that concerns us most is with health. The doctor has done a wonderful job in his long tedious journey from the medicine man of ancient time with his attempt to scare away evil spirits to the present day of scientific approach and intelligent diagnosis."

"It will take him many years of the new century to understand all the delicate chemical reactions that go on in the human system. The physician, the biologist, and the engineer are all being asked to lend their assistance in this great work. The exhibit of medicine, surgery, and general health education is one of the most important in this great exposition, in which we have a part."

"Most people think that science and industry are interested only in the development of labor saving machinery. This is entirely a false notion. But we must not forget that for the past 50 years when the great building of our railways, cities, and industrial plants was going on this labor saving was a most important thing because we did not have enough people to do the work. And only five years ago we had a scarcity of labor in this country."

"We are all very much more interested in the production of labor producing projects and invention than we are in labor saving. If you will only recognize how much there is yet

to be done that will be of general good to the whole human family, then we need not worry, but we must be bold enough to take those forward steps which will bring back prosperity in any measure that we desire or in any measure which we have imagination enough to conceive."

### Glenn Frank, Educator, Flays Apparent Spirit of Defeatism

Mr. Frank's remarks, which were frequently interrupted by vigorous applause, ran about as follows:

"It has been the essence of the American spirit to face the future with high expectancy of new and vibrant possibilities. The American has been a man of faith. He has always scorned the suggestion of surrender in the face of difficult circumstances. He needs to remember and to rely upon that spirit now."

"A thousand and one voices are whispering to him that his only hope of salvation and security lies in a deliberate retreat from this age of plenty and a planned return to the age of scarcity. Tonight some of us are undertaking to challenge the soundness of this whispered advice."

"There is no dodging the fact that the relentless advance of physical science and industrial technology has confronted us with unprecedented difficulties. The development of scientific processes has moved with airplane speed. The development of social policies has lumbered on at a stage-coach rate."

"Research in the physical sciences has produced social changes faster than research in the social sciences has perfected social controls. All sorts of maladjustments have occurred. And the result has been a race between scientific progress and social instability, with social instability, for the time being, in the lead."

"The blunt truth is that the revolutionary results of physical science and industrial technology have brought us to a cross-roads where decisions that will determine our destiny must be made."

#### Two Choices Open

"There are only two choices now open to us. We can call a halt on scientific research and technological advance until they no longer put so many strains on the traditional structure and functions of our social order. Or we can put our brains to the business of making such readjustments in our political, social, and economic policies as will enable us to take full human advantage of this new age of science, technology, and plenty."

"The first choice is unworthy of the American tradition. The second choice would mean that the spirit of the pioneers is not dead in us."

"To me the most disturbing fact of the time is the number of Americans, in high position and low, who are falling victim to a defeatist mood, apparently assuming that progress has come to a dead end, that science and technology have been too efficient in producing a limitless output at low prices, and that the thing to do is to plan a lesser output at high prices."

"To restrict production and to raise prices as a general policy is, to me, not liberalism but reaction, not statesmanship but surrender, not creative advance but cowardly retreat."

"That way lies the subsidizing of inefficiency. That way lies the sabotage of superior management that knows how to bring both the cost of production and the price of products down. That way lies a permanent and perilous lowering of living standards for the swarming millions."

"It was not for this that the pioneers bled their blood and sacrifice into the foundations of this nation. More goods at lower prices is the logical goal of an age of science and technology!"

"To me it is incredible that, in a world of tragically unfilled human need, we should now set out upon the Quixotic attempt to increase welfare by destroying wealth or declining to create it. Our ancestors fought valiantly over the centuries to conquer famine. Are we now to say that their conquest has been too decisive?"

"After the sweat and science of generations have brought us out of an economy of scarcity into an economy of plenty, are we to confess that we are incapable of managing plenty, and deliberately legislate a modified famine?"

"I think history will pass a bitter

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## Speakers at Sloan Dinner Tell How Today's Experiments Will Alter Future Life

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judgment upon us if, in the midst of such manifest need, we take this road in dealing with the difficulties now confronting our farms and our factories.

"Two things must, I think, be done in our schools, colleges, and universities to help prevent our taking this suicide's road.

"First, from one end of our school system to the other, we must rebuild our curricula around a spinal column of political, social, and economic studies which reduce to utter simplicity and intelligibility the plain principles of organization and operation that must govern the work of an age of science and technology if its magnificent mechanism for producing abundance is to serve instead of sink us.

"These studies must be organized, not in terms of traditional academic objectives, but for the avowed social purpose of training a generation of citizens to play a productive role in the creation, comprehension, and control of a workable social and economic order in an age of plenty.

"Second, the universities and research institutes must organize to insure an earlier consideration of the social and economic effects of the discoveries of the physical scientist and industrial technologist. Under the research system to date, the social scientists get into the game too late.

"They wait until the discoveries of the physical scientist and industrial technologist radically upset old social and economic arrangements and then come along as a kind of wrecking crew to clean up after the catastrophe and to suggest ways of preventing its recurrence. That has proved too costly a procedure socially.

"From now on the physical scientists and the social scientists must work hand in hand. We must devise a new method of continuous cooperation between the physical scientists and the social scientists in all our research centers.

"The social scientists must be kept informed of what the physical scientists are up to, not after the physical scientists have completed their researches and worked social and economic havoc with their results, but from the very beginning of the researches.

"If the chemists or physicists are on the trail of a new idea in 1934 that may prove workable in 1954, the social scientists should know it in 1934, not in 1954.

"And, through all the 20 years between 1934 and 1954, the social scientists should be considering ways and means of making this new idea help instead of hamstringing humanity if and when it becomes workable.

"If we can invent such a method of sustained cooperation, we can shorten, by at least a decade, the lag between the swiftly changing processes and the slowly changing policies of our national life.

"There are, in my judgment, the two major lines along which the universities and research institutes can best help us to take full advantage of this economy of science, technology, and plenty instead of running away from it and taking a coward's refuge in a policy of repressing, restricting, and reducing our maximum productive capacities."

### Dr. Fishbein, Journal Editor, Foresees Lengthened Life Span

Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*, forecast longevity as a result of laboratory research. Dr. Fishbein predicted that the normal life span will soon be 70 years compared with 60 years or less today, and 35 years a century ago.

The advances of civilization may bring with them new disease hazards, he pointed out, explaining that it is chiefly through control of infant mortality that the life expectation has been raised to 60 years in 1934 compared with 35 in 1833.

"Already success can be demon-

strated," Dr. Fishbein declared. "The boys and girls entering universities today are on the average 2 in. taller and weigh 7 to 10 lbs. more than did their parents and grandparents who entered these same universities in previous generations.

"With the discovery of vitamins and with the newer knowledge of nutrition, even better bodies will be available in a few generations. It is, moreover, reasonable to predict that the knowledge now available for controlling the birth of the unfit and the degenerate, eliminating hereditary strains that lead invariably to weak bodies and to disease, will be applied to more civilized communities in the future for the advantage of all mankind.

"Outstanding among recent discoveries have been those concerned with the glands. The glands regulate the size of the human being, the shape of his body, the speed of his living, and many of his functions.

"The possibilities, when all of the specific hormones and extracts have been derived from the pituitary, the thyroid, the liver, the adrenals, the thymus, and the other glands, are limited only by our imaginations.

"In the great A Century of Progress Exposition of the twenty-first century, medicine will again no doubt be outstanding in its contribution. We shall see the majority of mankind approximating the three score years and ten which is the normal biological cycle of man.

"We shall see a beginning of some control over the reproduction of the unfit and the degenerate. Infectious diseases will be eliminated. The bodies of little children will be better nourished. The better utilization of more leisure time will decrease the nerve strains and stresses now associated with both mental and physical breakdown."

### M. H. Aylesworth, NBC Head, Tells About 'Facsimile' Radio

Concerning communications, Merlin H. Aylesworth, president of the National Broadcasting Co., spoke on the prospects for facsimile radio and television.

"I believe the day will come when you will turn on the facsimile receiver when retiring and in the morning the paper tape will tell the story of what flashed through the sky while you slumbered," said Mr. Aylesworth.

"You will find road maps, fashion designs, comic sketches for the children, and no end of things, for whatever a pen can portray, facsimile radio will handle.

"Radio's pictures that move through space must be clear; they must be of sufficient size to serve as entertainment. The quality of the moving picture screen and broadcasting set the pace that television must follow.

"Sound broadcasting, when it began in 1920, had no such standards; it was a pioneering business. But it lived. It caught the popular imagination. And so in the romance of seeing by radio there will be sound and sight combined—the eye and ear will work together to enable men to see and hear to the ends of the earth.

"Through radio in the home man will look and hear around the earth as if the globe were but a baseball resting in the palm of his hand. With television will come a new prosperity; with prosperity will come many new radio surprises presented by men of science."

### Walter B. Pitkin, Psychologist, Pictures Life a Century Hence

In lighter vein, Prof. Walter B. Pitkin, author of "Life Begins at Forty," gave a radio broadcast purporting to be delivered in the year 2034 in which he described the great events of 1949, 1961, and 1969.

"The merger in 1949 of the world's 20 largest corporations into a life-term instalment program for goods and services had made possible," said Prof. Pitkin, "the offering to subscribers of complete equipment for living, food, clothing, house, automobile, airplane, television, world-wide travel tickets good on all trains and boats at a flat monthly rate.

"In 1953 a life and disability insurance policy was thrown in, and in 1959 complete medical service was added. By 1961 everybody was a subscriber. Nineteen sixty-nine saw 556,432,000 customers on the books of the Life, Liberty & Happiness Co.

"Governments became rapidly obsolete," continued Prof. Pitkin. "Politics died out. The bread lines were full of ex-aldermen and impoverished statesmen. People had everything

they wanted. Whenever they needed new shoes or a new car or a week-end ticket to Afghanistan, they called up Life, Liberty & Happiness Co.—and in a few minutes everything was delivered.

"In 1969 the merged, chain asylums took over the politicians and the great company's laboratory men got round to the bugs and the weather. On July 4, 1981, the last fly swatter on earth was publicly cremated at Chicago at A Century of Progress Exposition.

"Long before that the last flea, bedbug, cockroach, beetle, mite, and other pest had given up the insect's ghost. Progress began at last in a big way. Wars ended, as did sickness and food shortages.

"By 1960," continued Prof. Pitkin's dream, "long distance transportation, except for pleasure, blew up because each population was producing everything used.

"This local self-sufficiency came about through three revolutionary inventions. First, the small electric power unit, perfected around 1957, made useless the colossal super-power systems of earlier times. Power was wherever and whenever needed.

"The second invention was the local control of climate. Alonzo G. Mifflin, the eminent Guatemalan climatologist, built a super-wind trap around Winnipeg. The wind was slowed down from 50 miles per hour to 10 as it filtered through this trap; and its pressures were converted into electricity which was then used for warming the outdoors through an ingenious system of air flues laid under ground.

"By 1937, 89,000 miles of the traps were in service; and 6,000,000 square miles of sub-arctic lands hitherto too cold for crops and comfort became thickly populated and fertile.

"The third invention was the Russian electrochemical technique of stimulating seeds before planting them. A few people know that the Russians began this away back in 1930. But not until 1971 did they finish

their research. The cost of living then dropped so low that any man could get along passably on an income from 10 hours of work a week."

When pure science obtained the floor, Arthur H. Compton, professor of physics at the University of Chicago, explained the scientist as society's scout who invades nature's unexplored territory and returns with a report of what lies there.

"Great high voltage equipment is almost completed, which will form a new tool for investigating the inner citadel of the atom, where its precious store of energy is hidden." Prof. Compton announced to the diners.

"Powerful instruments are being built for observations in different parts of the world to study those mysterious visitors from outer space which we call cosmic rays. The methods of physics and chemistry which have proven so effective in their own fields are being extended to the study of growing cells with striking results.

"Our telescopes and spectrometers have shown us rather definitely the size of our vast universe. It is reasonable to suppose that we shall soon find some knowledge regarding the ancient history of that universe. Has it been in operation forever, or did it start at some more or less definite time in the ancient past?

"If the latter guess is correct, we may hope to learn the when and perhaps the how of that great beginning. One approach to this question comes through the cosmic rays which have perhaps been coursing through space since the beginning of the world, and may thus carry with them an account of those beginnings which we are already making in the laboratory of Madame Curie and elsewhere—artificial radioactive elements.

"Where will these lead? Very probably to the creation of useful new forms of matter. There is a remote possibility that such experiments may lead to a new store of available energy, and if so, the magnitude of

that energy should be tremendous. We do not yet know, however, whether this great store of atomic energy can be put to our use; much less can we suggest how.

"In an age when available power is a problem of great importance, the possibility of synthetically preparing chlorophyll, and through its action store up chemically the power from the sun in a more efficient way than can be done through the growth of plants, is an enticing one. It would seem highly probable that physical and chemical methods of making artificial living cells will be developed. Enough progress toward understanding the processes involved has already been made to predict that this further step is probably in the not distant future."

### Carl R. Gray, Union Pacific R.R. Head, Cites Railway Progress

Carl R. Gray, president of the Union Pacific Railroad, represented transportation on the speakers' program.

"Illustration of past progress and a measure of future possibilities in the development of rail transportation is the vivid contrast presented by the Union Pacific train of the sixties alongside a motor driven streamlined train of today, now standing just outside the building," Mr. Gray told the assemblage.

"We believe from practical experience with this new design that we are only on the threshold of greater opportunities for industry for the public which we will serve, and for the railroads themselves."

Following the talks, the diners went outside to look over and through the Union Pacific streamlined train—powered by General Motors (Winton) Diesel engines, and air conditioned by Frigidaire.

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## Mr. Sloan Dramatizes Industry's Viewpoint

WHEN 300 of the nation's business and industrial leaders—men representing the very top of every line of commercial endeavor in the United States—affirm the idea that the Administration's theory of smaller output at higher prices is a defeatist policy which will greatly handicap this country during the progress which will inevitably follow in the years to come, it must be recognized that something highly significant has happened. The New Deal has received its most serious challenge thus far.

Meeting in the General Motors building on A Century of Progress exposition grounds in Chicago, at the invitation of Alfred P. Sloan, Jr., president of General Motors Corp., these presidents and board chairmen of important business institutions heard—and applauded vigorously—a keynote speech by President Glenn Frank of the University of Wisconsin, a noted liberalist, who said:

"To restrict production and raise prices is to me not liberalism but reaction, not statesmanship but surrender, not creative advance but cowardly retreat."

"That way lies the subsidizing of inefficiency. That way lies the sabotage of superior management that knows how to bring both cost of production and price of products down. That way lies a permanent and perilous lowering of living standards for the swarming millions. More goods at lower prices is the logical goal of an age of science and technology."

Mr. Sloan, who is convinced that progressively higher standards of living will result through broadening the activities of industry by scientific and industrial research, and that the amount of available work can be continually expanded, called the meeting in order to turn the spotlight of publicity on research now in progress which should confirm his ideas. Expressing himself as being deeply concerned with the thinking of many who believe that we must disregard future possibilities and live merely by dividing up available jobs, and accepting a lower standard of living, General Motors' president feels that the time has come for the American public to evaluate seriously the possible results of the many-faceted government program.

It was highly fitting that this assemblage of forward-looking executives gather at "A Century of Progress" exposition. There, all about them, was tangible evidence of scientific progress to come, as well as that of the past century. Those who saw the Fair last year were even more impressed with the advances which have been made since the 1933 exposition.

Formal speakers on the program included both scientists, such as Prof. Arthur Compton, Nobel prize winner in physics, and business executives, such as Carl Gray, president of the Union Pacific Railroad, and Merlin H. Aylesworth, president of the National Broadcasting Co. The scientists foresaw further discoveries in the realm of pure knowledge; the industrialists envisioned increased employment and better living standards through the practical application of this newly discovered scientific knowl-

edge, affording new products and new industries.

Air conditioning was mentioned by many speakers as being one of the major contributions to better living—and better health—of the coming age. No matter whether the topic was factory-built houses, streamlined trains, faster and safer airplanes, or conquest of disease, air conditioning was brought in as an integral factor.

Perhaps the man who saw the biggest future for air conditioning was C. F. Kettering, vice president in charge of research for General Motors. Declaring that "we're going to learn a lot about things we think we know all about today," Mr. Kettering asked those present to look over the various exhibits and manifold applications of air conditioning to be found on the exposition grounds as examples of progress made by this new industry.

In answer to all the weighty arguments put up at Mr. Sloan's dinner, the New Dealers would probably assert that the "old methods" implied in the "progress" discussed by those present at the dinner no longer work. Yet, at the very spot on which this dinner was held is effective proof that the "old method"—giving the public something new, and giving it real value—is as effective today as it ever was.

Chicago has solved its depression problems (and few cities had sunk into the depths of despondency so far as gang-ridden and politician-milked Chicago) by putting on the Biggest Show on Earth, by giving the public something new, and by giving visitors their money's worth. Money is circulating freely over there today, the city's population is busy and happy, and the once-heavy gloom has been dispelled and forgotten.

Right here in our own backyard is further proof that the old formula of giving the public what it wants at a fair price still works. The refrigeration industry successfully defied the depression, and today is riding toward a new all-time high sales record which is apparently going to dwarf all previous sales figures. Receiving no help from any of the new mystic-letter agencies set up by the Administration, the industry actually is paying a burdensome tax as a penalty for its success and prosperity.

If the scientists and industrialists who testified at the Sloan dinner are right in their predictions of new products, new industries, and new prosperity—and who would know, if not they?—restrictive legislation of the defeatist school will undoubtedly be hampering and embarrassing in the years to come.

## WHAT OTHERS SAY

### Will the Little Fellow Get a Break?

ANOTHER chapter has been added to the saga of the small business man.

A bill making available \$40,000,000 to private industries through the Federal Reserve Bank and the RFC has been passed by the House. It still must overcome a few hurdles. First, the Senate must approve it. Second, the President must sign it. Third, the Government must lend the money.

So far, inter-bureaucratic strife has blocked the channel for making intermediate loans to help business.

Last August Jesse Jones promised that a billion dollars would be made available through banks to industry.

When it was shown that there was no channel for his promised billion, the RFC organized mortgage companies throughout the country. One was started in Detroit by the Board of Commerce—the Commercial Finance Co. It has had several loans approved, but has not been able to secure a nickel of government funds for distribution.

When the RFC turned its back upon the mortgage companies, its own creation, another idea was expounded through the press. We were to have 12 Federal industrial banks which would be able to make slow or intermediate loans to help finance payrolls and purchases. That was another mirage.

We have factories with orders on their books and material on hand, but no capital to finance payrolls. Lines of credit in banks have been largely eliminated. Receivables have resulted in dozens of cases.

Business and industry stagnate while Washington bureaus fight for the glory of being their savior. Thousands of dollars invested in establishing Industrial Mortgage Loan Companies—at the request of the RFC—will be wasted if Congress gives the Federal Reserve Banks the job of distributing these funds.

Thousands of applications now ready for approval will have to be withdrawn from the RFC and filed with Reserve Banks.

Employment and payroll relief will be needlessly delayed.

Congress should end this confusion and delay by making the funds available for immediate release through present established channels.—*The Detroliter*, May 28, 1934.

## LETTERS

### Why Electrolux Data Is Not Included

Electrolux Refrigerator Sales, Inc.  
51 E. 42nd St., New York  
May 23, 1934.

Editor:

In reference to your letter of May 15, asking for specifications of Electrolux, same to be printed in ELECTRIC REFRIGERATION NEWS, would advise that in view of the fact that Electrolux is a gas refrigerator we do not believe it has any business in the ELECTRIC REFRIGERATION NEWS publication and are therefore withholding such information.

F. E. SELLMAN,  
Vice president.

Western Union

May 25, 1934.  
Electrolux Refrigerator Sales Corp.  
51 E. 42nd St., New York, N. Y.

Please reconsider refusal of Electrolux specifications for our May 30 issue. Many dealers have criticized us for omitting Electrolux from past specifications and we believe their publication will be mutually advantageous. Must be received here Sun-day to make our printing deadline.

ELECTRIC REFRIGERATION NEWS.

Postal Telegraph

Chicago, Ill.  
May 26, 1934.

Editor:

Our decision to keep Electrolux specifications out of ELECTRIC REFRIGERATION NEWS is final.

F. E. SELLMAN.

Editor's Note: Sorry you feel that way about it, Mr. Sellman. Electrolux is being sold in direct competition with electric refrigerators. Why not permit the trade to make a point-by-point comparison? Isn't it better to have the facts and thus discourage unfair and untrue claims on the part of unscrupulous salesmen?

### Electro-Kold Explains Its Place in the Industry

Electro-Kold  
E. S. Matthews, Inc.  
Spokane, Wash.

May 22, 1934.

Editor:

Relying to your letter of May 17, Electro-Kold is being manufactured only for distribution in our retail and distributing offices of Spokane and Seattle, Wash.

We do not distribute to the general trade on the Pacific Coast as formerly. Inasmuch as we solicit inquiries only from retail customers and dealers in the Washington, northern Idaho, and western Montana territory, we did not send in specifications.

Furthermore, we purchase our household models and market them under the trade name Electro-Kold, confining our manufacturing activities to commercial refrigeration only.

This is why we do not desire general listing in the manufacturers' section, although we technically are manufacturers.

E. S. MATTHEWS,  
President.

### Guess We'll Have to Investigate these Schools

O. F. Schoeck School  
Alton, Ill.

May 25, 1934.

Editor:

We have just received our May 23 issue of the ELECTRIC REFRIGERATION NEWS and note your answer to question 1620 on page 19 of that issue. You state you have no record of the O. F. Schoeck School in Alton, Ill. I can not understand how you could make such a statement unless it was simply made through error and without your having consulted your files.

I call your attention to the fact that about 15 subscriptions to your magazine have been received by your organization; also several orders for your 1934 REFRIGERATION DIRECTORY. These subscriptions are all from our representatives and except for one or two cases the addresses given were the O. F. Schoeck School in Alton. I also call your attention to the enclosed order for more subscriptions.

This school has been giving instruction in electric refrigeration and air conditioning for the past three years. Our course of training consists of 64 lessons, all dealing with some phase of refrigeration or air conditioning. These lessons are prepared by leading men in the industry and we know that they are giving satisfaction to all our students. We have hundreds of letters from satisfied students throughout the United States, Canada, Alaska, Cuba, and the Hawaiian Islands. We have been doing advertising in national publications and daily newspapers in the above named territory for that period of time and have representatives throughout that territory enrolling students.

I feel that you should make a correction in the next issue, giving

correct information regarding our school. As a closing statement I might add we are operating according to the code for home study schools, established by the Federal Trade Commission, the National Home Study Council, and the National Recovery Administration. Also the fact that I have been in school work since 1920 and hold three degrees from recognized educational institutions.

O. F. SCHOECK.

**Answer:** With a fresh REFRIGERATION DIRECTORY available, the correspondent overlooked the subscription list as a source of information about schools. We apologize. The fact remains, however, that the editors had no knowledge of your schools. We are inclined to believe that new concerns with products or services to sell should make themselves known. So many refrigeration schools have started up and quickly faded out that we hesitate to recommend them to students until we have evidence of stability. We will be interested in further details about your courses, authors, and graduates.

1100 West Center St.  
Anaheim, Calif.

Editor:

I have been approached to take a course in electrical refrigeration and air conditioning with the O. F. Schoeck School of Alton, Ill. It is a correspondence course.

I wanted to know if you would please tell me, if you can, if this is an accredited school for teaching this work, and do you know whether or not the manufacturers recognize this school.

If you can give me no information in regards to this school, I would appreciate it very much if you could tell me where I might inquire.

Can you recommend to me a good school where I can study these subjects. One that the manufacturers recognize. Either a correspondence school or at actual school work.

The Norge Corp. told me to write and inquire from you as they couldn't tell me anything in regards to the school.

RAYMOND BADGLEY.

**Answer:** See letter above.

### Too Many Gadgets?

4115 Buell Drive, Ft. Wayne, Ind.

May 25, 1934.

Editor:

After reading your article on the front page of the May 23 issue of the NEWS concerning the attitude of electric refrigeration dealers in Knoxville, Tenn., to the activities of the Tennessee Valley Authority I would like to venture my opinion of the situation.

It looks to me as though the refrigeration industry is right now in the same place that the automobile industry was in before Henry Ford set out to prove that automobiles could be made and sold to families of limited means.

If the price of automobiles had been kept up to where hide-bound manufacturers thought they should be the automobile would still be a plaything of the rich.

Even now Mr. Ford is showing his competitors up by being wise enough to keep superfluous gadgets off his automobile. Think of the money that could be saved in the refrigeration industry on that one item alone.

I believe the manufacturing costs of refrigeration could be very materially reduced if the various manufacturers would quit continually changing their machines, not necessarily to make them more efficient but just merely to gain a selling advantage over their competitors, and standardize on something they know to be as good as can be made with our present knowledge of refrigeration.

If they would do this then it would be possible for a considerable reduction in the price to dealers. The dealers could then sell at a lower price and still make a reasonable profit.

Furthermore I do not think it hardly necessary to say that a dealer could afford to sell on a smaller margin if he could do a larger volume of business.

Also I think it about time that the no-service-necessary bubble be bursted and customers be told flatly that they must stand their own service costs after a reasonable length of time.

J. K. MARQUARDT.

### She Wants Specifications

Box 48, Mt. Holly Springs, Pa.

May 22, 1934.

Editor:

Enclosed find ten cents (10c) for which please send me a copy of ELECTRIC REFRIGERATION NEWS, issue of March 22, 1933. I am about to buy an electric refrigerator and want some reliable guide. I am particularly interested in information regarding: first, the Grunow; secondly, the Kelvinator. If any later issues of your paper will give additional information, send them and I will remit at once. It is almost impossible to learn from dealers the information one should have regarding the mechanism, refrigerant, and its toxicity, the insulation, the reliability of the producer, et cetera, of the various machines.

Thanking you and hoping for a prompt reply, I remain,  
(Mrs.) GERALDINE E. SLOOP.

## SPECIFICATIONS OF HOUSEHOLD REFRIGERATORS

Following are specifications of 285 models of 37 makes of household refrigerators, prepared by ELECTRIC REFRIGERATION NEWS with the cooperation of the refrigerator manufacturers.

These data incorporate many changes—additions of new models, additional information on existing models, specifications of several refrigeration lines announced this year, and price revisions made since specifications were last published in the March 21 issue. Also, this is the first time that specifications of kerosene-operated and gasoline engine driven refrigerators have been included.

Except when otherwise stated, refrigeration capacities are given in pounds of ice melting effect per 24 hours, rated according to standard test conditions established by the American Society of Refrigerating Engineers. Gross and net food storage capacities and shelf area are all given according to the standard method of figuring developed by the Refrigeration Division of the National Electrical Manufacturers Association.

### Coldspot and Superfex To Appear Next Week

Specifications of Coldspot electric refrigerators sold by Sears Roebuck & Co. of Chicago, and Superfex kerosene-operated refrigerators manufactured by the Perfection Stove Co. of Cleveland, were not received for publication in this issue of the News but these companies have promised to furnish the data in time to appear in next week's issue.

Electrolux Refrigerator Sales, Inc., of New York refused to furnish specifications. See correspondence under "Letters" on opposite page.

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### Frigidaire

Frigidaire Corp., Dayton, Ohio

Model No.	434	534	634	434	Master	634	434	634	734	934	Super	1234	1534	1234	1534
<b>Cabinet Specifications</b>															
Overall dimensions (in.)															
Height															
Width															
Depth															
Inside dimensions of liner (in.)															
Height															
Width															
Depth															
No. of doors															
<b>Storage Capacity</b>															
Gross food storage (cu. ft.)															
Net food storage (cu. ft.)															
No. of shelves															
Total shelf area (sq. ft.)															
<b>Ice Cube Trays</b>															
No. of trays															
No. of rubber grids															
No. of rubber trays															
No. of cubes produced															
Weight of cubes (lbs.)															
<b>Thickness of Insulation (in.)</b>															
Top															
Sides															
Bottom															
<b>Compressor Specifications</b>															
Compressor capacity I.M.E. (lbs.)															
Motor size (hp.)															
1/20 1/16 1/16															
1700 1700 1700															
Compressor speed (r.p.m.)															
300 350 440															
Compressor bore (in.)															
1 1 1															
Compressor stroke (in.)															
No. of cylinders															
1 1 1															
Amount of refrigerant in system (lbs.)															
7/8 1 1 1 1 1 1 1 1 1 1															

**Keokuk**

Keokuk Refrigerating Co., Keokuk, Iowa

Model No. 2447 L404 L504 L604 L704  
P504 P604 P704**Cabinet Specifications**

Overall dimensions (in.)	53½	56½	60½	63½	63½
Height	23½	25½	26½	30½	34½
Width	20½	20½	22½	22½	23½
Depth	1	1	1	1	1
No. of doors					

**Storage Capacity**

Gross food storage (cu. ft.)	4.68	4.65	5.72	7.05	8.32
Net food storage (cu. ft.)	4.00	4.07	5.00	6.17	7.41
No. of shelves	3	3	6	6	6
Total shelf area (sq. ft.)	8.42	8.95	12.45	12.85	15.15

**Ice Cube Trays**

No. of trays	2	3	3	4	5
Weight of cubes (lbs.)	4	6	6	8	10

**Thickness of Insulation (in.)**

Top, sides & bottom	2	2	2½	3	3
---------------------	---	---	----	---	---

**Compressor Specifications**

Compressor capacity I.M.E. (lbs.)	100	100	110	110	110
Motor size (hp.)	1/6	1/6	1/6	1/6	1/6
Compressor speed (r.p.m.)	340	340	340	340	340

No. of cylinders	1	1	1	1	1
------------------	---	---	---	---	---

Price, f.o.b. factory, model 2447 & L series	\$104	136.50	149.00	169.50	203.00	
P series				\$162.00	179.50	223.50

\* \* \*

**Cabinet Materials**

Make of cabinet	Seeger	Tinned
Finish of shelves	Bakelite	Rubber
Material used for breaker strip	Bakelite	Rubber

\* \* \*

**Finish**

Cabinet finish (exterior)	Model 2447 & L series—Dulux; P series—porcelain
Cabinet finish (interior)	Porcelain

**Hardware**

Process of manufacture	Stamping
Basic metal of hardware	Brass
Finish of hardware	Chromium

**Compressor**

Make of compressor	Keokuk
Type of system	Conventional
Type of compressor	Reciprocating
Compressor drive	Belt

Type of shaft seal	Bellows
Location of compressor	Below

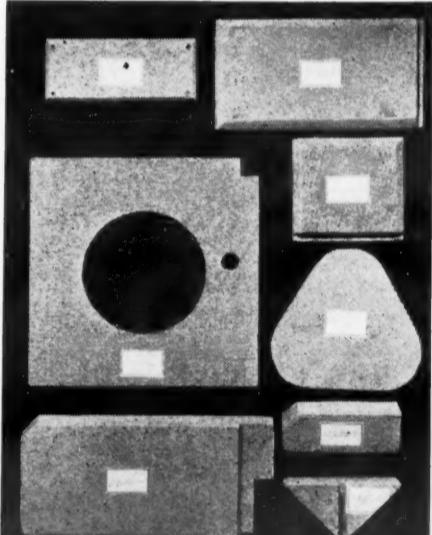
**Lubrication**

How often should motor be oiled	Annually
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**Motor**

Make of motor	Century
Type of motor	Capacitor

Type of motor	Century
---------------	---------

**CELOTEX****A Practical, Workable Structural Material that Insulates**

Finds Favor with  
Cabinet Makers  
Because of  
Outstanding  
Advantages

Samples of fabricated Celotex Insulating Cane Board illustrating its workability—the ease with which it is machined to meet any cabinet requirement.

Celotex has found great favor with cabinet engineers, designers, and manufacturers. It is both effective insulation and a practical, workable material, light in weight, but sturdy and strong.

**INSULATION**—Celotex Insulating Cane Board successfully retards the passage of heat and thus fulfills the first requirement for refrigerators and coolers. The long, tough cane fibres, of which it is made, and its method of manufacture are responsible for its high degree of insulating efficiency.

**STRENGTH**—Next, as a building material, Celotex contributes structural strength to such a degree that a more substantial cabinet can be constructed with lighter framing members than is the usual practice.

**WORKABILITY**—Then there is Celotex workability. It is readily machined for the cutting of holes, for beveling or for notching. It is a thoroughly practical material.

**SANITARY**—Cabinets must be sanitary. Celotex meets this requirement because each fibre is sterilized,

as well as waterproofed. All Celotex Cane Fibre Products are manufactured under the Ferox Process (patented) and therefore effectively resist damage by Fungus Growth, Dry Rot, and Termites ("White Ants").

**TIGHT**—By the use of Celotex, cabinet designers are also able to avoid certain difficulties that frequently are the source of trouble and cause a loss of refrigerating efficiency. For example, heat-leaking cracks or joints are reduced to a minimum. Each insulated area of the cabinet may be covered by a single board cut the precise length, width and thickness.

**CONSULTATIONS**—Celotex engineers are ready to advise with you. They are thoroughly experienced in the refrigeration field, and will gladly supply you with technical data or general information.

THE CELOTEX COMPANY, 919 NO. MICHIGAN AVE., CHICAGO, ILL.

**CELOTEX**  
BRAND  
INSULATING CANE BOARD  
Reg. U. S. Pat. Off.

**General Electric**

General Electric Co., Specialty Appliance Sales Department, Nela Park, Cleveland, Ohio

Model No. — Flat Top — All Steel — Porcelain —  
F-7 F-5 F-4 X-7 X-5 T-9 T-7 S-107 S-146 S-182 P-170 P-134 P-110 T-47

**Cabinet Specifications**

Overall dimensions (in.)	56½	52½	52½	65½	64½	68	66½	65½	66½	68½	74½	71½	68½	64½
Height	29½	26½	23	28½	24	34½	28½	44½	54½	61½	48	42	24	24
Width	25½	23	23	22½	21½	26½	22½	23½	23	26½	24½	24	25	24
Depth	25½	23	23	22½	21½	26½	22½	23½	23	26½	24½	24	25	24

**Inside dimensions of liner (in.)**

Height	33	29	29	33½	32½	34	33½	32½	33½	35½	33	32½	32	
Width	24	21½	18	22½	18	27½	22½	38½	47	55½	53	40½	35½	32½
Depth	17	15½	15½	17	16	19½	17	17½	18	18½	17	18	19	15
No. of doors	1	1	1	1	1	1	1	2	2	3	2	2	1	

**Storage Capacity**

Net food storage (cu. ft.)	7.2	5.3	4.3	7.0	5.0	9.0	7.0	10.7	14.6	18.2	17.0	13.4	11.0	4.7
</

**Leonard**

Leonard Refrigerator Co., 14260 Plymouth Road, Detroit, Mich.

	T-1	SL-1	SL-15	SL-2	SL-3	LD-2	LD-3	SP-2	PD-2	PD-3	PD-4	PD-5
Overall dimensions (in.)	50 $\frac{1}{4}$	51 $\frac{1}{4}$	52 $\frac{1}{4}$	55 $\frac{1}{4}$	57 $\frac{1}{4}$	55 $\frac{1}{4}$	57 $\frac{1}{4}$	55 $\frac{1}{4}$	55 $\frac{1}{4}$	55 $\frac{1}{4}$	57 $\frac{1}{4}$	64 $\frac{1}{4}$
Height	24 $\frac{1}{4}$	24 $\frac{1}{4}$	27 $\frac{1}{4}$	28 $\frac{1}{2}$	31 $\frac{1}{4}$	26	26	26 $\frac{1}{2}$	26	26	26 $\frac{1}{2}$	40 $\frac{1}{4}$
Width	24 $\frac{1}{4}$	24 $\frac{1}{4}$	25 $\frac{1}{4}$	26	26	26	26	26	26	26	26 $\frac{1}{2}$	26 $\frac{1}{2}$
Depth	24 $\frac{1}{4}$	24 $\frac{1}{4}$	25 $\frac{1}{4}$	26	26	26	26	26	26	26	26 $\frac{1}{2}$	26 $\frac{1}{2}$
Inside dimensions of liner (in.)	24 $\frac{1}{4}$	24 $\frac{1}{4}$	24 $\frac{1}{4}$	27	28 $\frac{1}{4}$	27	28 $\frac{1}{4}$	27	27	28 $\frac{1}{4}$	35 $\frac{1}{4}$	32 $\frac{1}{2}$
Height	19 $\frac{1}{2}$	19 $\frac{1}{2}$	22 $\frac{1}{2}$	23 $\frac{1}{2}$	25 $\frac{1}{2}$	22 $\frac{1}{2}$	25 $\frac{1}{2}$	22 $\frac{1}{2}$	22 $\frac{1}{2}$	25 $\frac{1}{2}$	25 $\frac{1}{2}$	32 $\frac{1}{2}$
Width	17	17	18 $\frac{1}{2}$	18								
Depth	1	1	1	1	1	1	1	1	1	1	1	2
No. of doors	1	1	1	1	1	1	1	1	1	1	1	2
<b>Storage Capacity</b>												
Gross food storage (cu. ft.)	4.68	4.68	5.89	6.45	7.67	6.45	7.67	6.45	6.45	7.67	9.59	11.7
Net food storage (cu. ft.)	4.22	4.35	5.47	6.03	7.21	5.88	7.04	6.03	5.88	7.04	8.96	10.6
No. of shelves	3	3	3	5	5	6	6	5	6	6	7	5
Total shelf area (sq. ft.)	8.34	8.34	10.45	12.62	14.75	13.67	16.14	12.62	13.67	16.14	19.45	21.88
<b>Ice Cube Trays</b>												
No. of trays	2	2	3	3	4	3	4	3	3	4	4	5
No. of cubes produced	42	42	63	63	84	81	108	63	81	108	108	108
Weight of cubes (lbs.)	3.4	3.4	5.1	5.1	6.8	8.3	11.0	5.1	8.25	11.0	11.0	16.5
<b>Thickness of Insulation (in.)</b>												
Top	2 $\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	3	3
Sides	2	2	2 $\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	3
Bottom	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2$\frac{1}{2}$	2 $\frac{1}{2}$	3	3
<b>Compressor Specifications</b>												
Compressor capacity B.t.u. per hour (15° F. suction, 90° F. air)	700	700	700	700	900	900	900	900	900	900	1150	1400
Motor size (hp.)	1 $\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$
Compressor speed (r.p.m.)	640	640	640	640	410	410	410	410	410	410	525	640
Compressor bore (in.)	1 $\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$
Compressor stroke (in.)	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1 $\frac{1}{2}$
No. of cylinders	1	1	1	1	2	2	2	1	2	2	2	2
Amount of refrigerant in system (lbs.)	2.81	2.81	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.44	3.63
Quantity of lubricant in system (lbs.)	1.25	1.25	1.25	1.25	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63
Weight, net (lbs.)	314	316	388	372	403	398	423	380	385	432	503	575
Price, installed in first zone	\$114.75	129.50	154.50	179.50	209.50	232.50	263.50	209.50	257.50	285.00	322.50	389.50

**Universal Cooler**

Universal Cooler Corp., 7424 Melville Ave., Detroit, Mich.

Model No.	400	402	455	503-P	604-P	705-P
<b>Cabinet Specifications</b>						
Overall dimensions (in.)						
Height						
Width						
Depth						
Inside dimensions of liner (in.)						
Height						
Width						
Depth						
No. of doors						
<b>Storage Capacity</b>						
Gross food storage (cu. ft.)	4.0	4.6	4.42	5.92	6.93	8.4
Net food storage (cu. ft.)	3.5	4.1	4.0	5.18	6.01	7.47
No. of shelves	3	3	3	4	4	4
Total shelf area (sq. ft.)	6.6	8.0	8.0	11.6	13.0	15.5
<b>Ice Cube Trays</b>						
No. of trays	2	2	2	3	4	5
No. of cubes produced	36	56	56	84	112	140
Weight of cubes (lbs.)	3	4	4	6	8	10
<b>Thickness of Insulation (in.)</b>						
Top	1 $\frac{1}{2}$	3	1 $\frac{1}{2}$	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$
Sides	2 $\frac{1}{2}$	2	1 $\frac{1}{2}$	2 $\frac{1}{2}$	3	3
Bottom	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$
<b>Compressor Specifications</b>						
Compressor capacity I.M.E. (lbs.)	96	96	96	96	96	96
Motor size (hp.)	1 $\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$
Compressor speed (r.p.m.)	430	430	430	430	430	430
Compressor bore (in.)	1 $\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$
Compressor stroke (in.)	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1 $\frac{1}{4}$
No. of cylinders	1	1	1	1	1	1
Weight, net (lbs.), lacquer models	190	240	215	273	320	390
Net (lbs.), porcelain models	...	...	293	345		

**Servel**

Servel Sales, Inc., Evansville, Ind.

	CD	CD	CD	CD	CD
Model No.	46	51	61	71	86
<b>Cabinet Specifications</b>					
Overall dimensions (in.)					
Height	50%	52%	55	59	62%
Width	24%	24%	25%	27%	35%
Depth	24	24	24%	26%	26%
Inside dimensions of liner (in.)					
Height	26%	32	34	35%	35%
Width	19	18	19	20%	26
Depth	18	17	17%	18	18%
No. of doors	1	1	1	1	1
<b>Storage Capacity</b>					
Gross food storage (cu. ft.)	5.2	5.7	6.6	7.6	9.9
Net food storage (cu. ft.)	4.6	5.1	6.1	7.1	8.6
No. of shelves	4	5	5	5	5
Total shelf area (sq. ft.)	8.5	9.8	11.3	12.3	15.7
<b>Ice Cube Trays</b>					
No. of trays	2	2	3	3	3
No. of cubes produced	42	42	63	63	60
Weight of cubes (lbs.)	3.75	3.75	5.6	5.6	6.5
<b>Thickness of Insulation (in.)</b>					
Top	2	2½	2½	3	3
Side	2	2½	2½	3	3
Bottom	2	2½	2½	3	3
<b>Compressor Specifications</b>					
Motor size (hp.)	1/6	1/6	1/6	1/6	1/6
Compressor speed (r.p.m.)	550	550	550	550	550
Compressor bore (in.)	1½	1½	1½	1½	1½
Compressor stroke (in.)	1½	1½	1½	1½	1½
No. of cylinders	1	1	1	1	1
Price, installed, without freight	\$129	157.50	168	178.50	204.75
Weight, net (lbs.)	285	310	325	375	455
* * *					
<b>Cabinet Materials</b>					
Make of cabinet	Servel				
Material used for frame	Wood				
Finish of shelves	Tinned				
Materials used for breaker strip	Maplewood				
Material used for gasket	Rubber				
Make of gasket	Miller				
Make of insulation	Temlok				
<b>Finish</b>					
Cabinet finish (exterior)	Pyroxylin lacquer				
Cabinet finish (interior)	Porcelain				
<b>Compressor</b>					
Make of compressor	Servel				
Type of system	Conventional				
Type of compressor	Reciprocating				
Compressor drive	Belt				
Type of shaft seal	Bellows				
Location of compressor	Below				
<b>Lubrication</b>					
Brand of compressor lubricant	Argon				
Quantity in system	1 pt.				
How often should motor be oiled	Annually				
<b>Hardware</b>					
Make of hardware	Keeler Brass and National Lock				
Process of manufacture	Forged and stamped				
Basic metal of hardware	Brass				
Finish of hardware	Chromium				
<b>Control</b>					
Make of control	Cutler-Hammer				
Type of control	Temperature				
Temperature regulation method	Manual				
How defrosted	Shut down unit				
<b>Evaporator</b>					
Make of evaporator	Servel				
Evaporator construction	Shell				
Metal used	Steel				
Type of refrigerant control	Expansion				
Make of expansion valve	Detroit Lubricator				
Type of ice cube trays	Aluminum				
<b>Motor</b>					
Make of motor	Wagner				
Type of motor	Repulsion				
<b>Refrigerant</b>					
Refrigerant used	Methyl chloride				
Amount in system	.23 lbs.				
<b>Condenser</b>					
Make of condenser	Fedders				
Method of cooling	Fan				
Type of condenser	Finned tube				
<b>Policy</b>					
Guarantee on cabinet	1 year				
Guarantee on system	1 year				
Serviced by	Distributor or dealer				
Are replacement parts sold to independent service companies	No				



Century Motors are meeting all of the demands of Commercial Refrigerating and Air Conditioning Equipment with Conspicuous Satisfaction.

CENTURY ELECTRIC COMPANY  
1806 Pine Street St. Louis, Mo.

Offices and Stock Points in Principal Cities  
**Century**  
MOTORS

COMMERCIAL REFRIGERATION  
AIR CONDITIONING

**Starr Freeze**

The Starr Co., Richmond, Ind.

Model No. ....

T R M Q F G H

**Cabinet Specifications**

Overall dimensions (in.)	50%	55%	57%	57½	60½	67	67½
Height	20½	24½	32½	37½	46½	49½	49½
Width	20	22½	26	24	26	26	25½

Inside dimensions of liner (in.)

Height	25½	27½	29½	30	29½	35	52½
Width	15½	19½	25½	31	39½	42½	42½
Depth	13½	16½	19½	16½	16½	16	16

No. of doors .....

1 1 1 2 2 4

**Storage Capacity**

Net food storage (cu. ft.)	2.85	4.0	6.1	7.18	8.9	12.1	17.8
No. of shelves	2	4	6	5	10	10	10
Total shelf area (sq. ft.)	4.4	9.0	13.0	11.75	16.25	20.75	28.16

**Ice Cube Trays**

No. of trays	2	2	4	5	6	6	12
No. of cubes produced	30	56	112	140	168	224	336
Weight of cubes (lbs.)	5	5	10	12½	15	15	30

**Thickness of Insulation (in.)**

Top	2	3	3	3½	3½	3½	3½
Sides	2	2½	3	3½	3½	3½	3½
Bottom	2	2½	4	3½	3½	3½	4

**Compressor Specifications**

Compressor capacity I.M.E. (lbs.)	80	100	117	140	203	263	354
Motor size (hp.)	1/6	1/6	1/6	1/6	1/6	1/6	1/6
Compressor speed (r.p.m.)	300	300	550	650	600	300	400



**Potter**

Potter Refrigerator Corp., 220 Delaware Ave., Buffalo, N. Y.

Model No.

L5 L6 L7 L104 L132 D100 D130 D150

**Cabinet Specifications**

Overall dimensions (in.)

Height	57 $\frac{1}{2}$	57 $\frac{1}{4}$	63 $\frac{1}{4}$	57 $\frac{1}{4}$	63 $\frac{1}{4}$	63 $\frac{1}{4}$	65 $\frac{1}{2}$
Width	23 $\frac{1}{2}$	29 $\frac{1}{2}$	33 $\frac{1}{2}$				
Depth	20 $\frac{1}{2}$	22 $\frac{1}{2}$					

\*G.S. F. S. G. S. F. S. G. S. F. S. G. S. F. S.

Height 31 29 34 $\frac{1}{2}$  15 $\frac{1}{2}$  9 22 9 16 $\frac{1}{2}$  9 22 $\frac{1}{2}$  9 22 $\frac{1}{2}$  10 $\frac{1}{2}$ Width 19 $\frac{1}{4}$  24 24 24 20 24 20 24 20 28 24Depth 16 $\frac{1}{2}$  17 17 17 12 17 12 16 $\frac{1}{2}$  15 $\frac{1}{2}$  16 $\frac{1}{2}$  15 $\frac{1}{2}$ 

No. of doors 1 1 1 1 1 1 1 2

Storage Capacity

No. of shelves 5 5 6 5 6 5 6 6

Total shelf area (sq. ft.) 9.9 11.3 14.5 10.4 13.2 10.3 13.0 15.0

Ice Cube Trays

No. of trays 3 3 4 3 3 3 3 4

No. of cubes 84 84 112 84 84 84 84 112

Weight of cubes (lbs.) 6 6 8 6 6 6 6 8

Thickness of Insulation (in.)

Top 3 3 3 3 3 3 3 3

Sides 2 2 $\frac{1}{2}$  2 $\frac{1}{2}$  2 $\frac{1}{2}$  2 $\frac{1}{2}$  2 $\frac{1}{2}$  2 $\frac{1}{2}$  2 $\frac{1}{2}$ 

Bottom 3 4 4 4 4 4 5 5

Compressor Specifications

Compressor capacity (lbs.) I.M.E. 120 120 120 120 120 120 120 166

Motor size (hp.)  $\frac{1}{6}$   $\frac{1}{6}$   $\frac{1}{6}$   $\frac{1}{6}$   $\frac{1}{6}$   $\frac{1}{6}$   $\frac{1}{6}$   $\frac{1}{4}$ 

Compressor speed (r.p.m.) 430 430 430 430 430 430 430

Compressor bore (in.)  $1\frac{1}{2}$   $1\frac{1}{2}$   $1\frac{1}{2}$   $1\frac{1}{2}$   $1\frac{1}{2}$   $1\frac{1}{2}$   $1\frac{1}{2}$   $1\frac{1}{2}$ Compressor stroke (in.)  $1\frac{1}{4}$   $1\frac{1}{4}$   $1\frac{1}{4}$   $1\frac{1}{4}$   $1\frac{1}{4}$   $1\frac{1}{4}$   $1\frac{1}{4}$   $1\frac{1}{4}$ 

No. of cylinders 1 1 1 1 1 1 1 1

Price, installed \$167 \$205 \$247 \$241

Weight, total shipping (lbs.) 375 420 430 450 475 480 520 580

\*G.S.—general food storage  
F.S.—frozen storage**Cabinet Materials**Make of cabinet Rex  
Material used for frame Steel and Englemann spruce

Finish of shelves L models—tinned; D models—porcelain

Material used for breaker strip Panelyte

Material used for gasket Rubber

Make of insulation Balsam Wool

Finish Cabinet finish (exterior) L models—lacquer; D models—porcelain

Cabinet finish (interior) Porcelain

Hardware Make of hardware Grand Rapids Brass

Process of manufacture Cast &amp; stamped

Basic metal of hardware Brass

Finish of hardware Chromium

Compressor Make of compressor Universal Cooler

Type of compressor Conventional

Type of compressor Reciprocating

Compressor drive Belt

Type of shaft seal Bellows

Location of compressor Below

Refrigerant Electric light; porcelain shelves; five-way door latch; frozen storage compartment maintains low temperatures for frozen foods; beverage compartment; fruit &amp; vegetable storage.

Control Make of control Cutler-Hammer

Type of control Temperature

Temperature regulation method Fixed

Condenser Make of condenser Long

Method of cooling Fan

Type of condenser Finned tube

Evaporator Make of evaporator Potter

Evaporator construction First evaporator—continuous coil in sleeve; second evaporator—continuous large area

Metal used Aluminum &amp; copper

Make of expansion valve Detroit

Type of ice cube trays Aluminum, one rubber tray in each

Motor Make of motor Wagner

Type of motor Repulsion-induction

Special Features

Refrigerant Methyl chloride

Trade name Artic

Amount in system Model D-150—1 $\frac{1}{2}$  lbs;

others—1 lb.

Lubrication Brand of compressor lubricant Argon

Quantity in system  $\frac{3}{4}$  pt.

How often should motor be oiled Every 3 months

Policy Guarantee on cabinet 1 year

Guarantee on system 1 year

Serviced by Distributor or dealer

Are replacement parts sold to independent service companies Yes

**Waukesha**

Waukesha Motor Co., Waukesha, Wis.

A compression type refrigerator for farms, driven by a  $\frac{1}{2}$ -hp. gasoline engine.

Model No. 704

**Cabinet Specifications**

Overall dimensions (in.)

Height 58 $\frac{1}{2}$ Width 34 $\frac{1}{2}$ Depth 27 $\frac{1}{2}$ 

Inside dimensions of liner (in.)

Height 32 $\frac{1}{2}$ Width 27 $\frac{1}{2}$ Depth 16 $\frac{1}{2}$ 

No. of doors 1

Storage Capacity

Gross food storage (cu. ft.) 8.32

Net food storage (cu. ft.) 7.22

No. of shelves 7

Total shelf area 15.15

Ice Cube Trays

No. of trays 2

No. of cubes produced 54

Weight of cubes (lbs.) 6 $\frac{1}{2}$ 

Thickness of Insulation (in.)

Top 3

Sides 3

Bottom 3

Compressor Specifications

Compressor capacity I.M.E. 250

Motor size (hp.)  $\frac{1}{2}$ 

Compressor speed (r.p.m.) 625

Compressor bore (in.)  $1\frac{1}{2}$ Compressor stroke (in.)  $1\frac{1}{2}$ 

No. of cylinders 1

Weight, net (lbs.) 560

Price, f.o.b. factory \$295

Cabinet Materials

Make of cabinet Seeger

Material used for frame Steel

Finish of shelves Tinned

Material used for breaker strip Bakelite

Material used for gasket Rubber

Make of insulation Balsam Wool

Finish Cabinet finish (exterior) Dulux

Cabinet finish (interior) Porcelain

Hardware

Process of manufacture Cast

Basic metal of hardware Brass

Finish of hardware Chromium

Compressor

Make of compressor Waukesha

Type of system Conventional

Type of compressor Reciprocating

Compressor drive Direct

Type of shaft seal Bellows

Location of compressor Below

Refrigerant

Refrigerant used Methyl chloride

Amount in system 2 lbs.

Lubrication

Brand of compressor lubricant Argon

Quantity in system 1 pt.

How often should engine be oiled Weekly

Control

Make of control Cutler-Hammer

Type of control Temperature

Temperature regulation method Manual

How defrosted Defrost position on control

Condenser

Method of cooling Fan

Type of condenser Finned

Evaporator

Make of evaporator Waukesha

Type of evaporator construction Tank

Metal used Brass

Make of expansion valve Detroit

Type of ice trays Aluminum

Special Features

Interior light all models except 43 and 63; knee touch latch all CL and CP models except 43 and 63.

Compressor

Make of compressor

Type of compressor

Compressor drive

Type of shaft seal

Location of compressor

Refrigerant

Refrigerant used SO<sub>2</sub>

Control

Make of control Westinghouse

Type of control Temperature

Temperature regulation method Manual

How defrosted Defrost position on control

Cabinet Materials

**Kelvinator**

Kelvinator Sales Corp., 14260 Plymouth Road, Detroit, Mich.

Model No. V N NA NB SA SB SC PA PB PC PD D-2 D-3 D-4 D-5 D-6 D-7

**Cabinet Specifications**

Overall dimensions (in.) (including legs, hardware, etc.)	50 $\frac{1}{2}$	50 $\frac{1}{2}$	52 $\frac{1}{2}$	57 $\frac{1}{2}$	51 $\frac{1}{2}$	56 $\frac{1}{2}$	57 $\frac{1}{2}$	62 $\frac{1}{2}$	57 $\frac{1}{2}$	62 $\frac{1}{2}$	66 $\frac{1}{2}$	66 $\frac{1}{2}$	73 $\frac{1}{2}$	73 $\frac{1}{2}$
Height	24 $\frac{1}{2}$	24 $\frac{1}{2}$	27 $\frac{1}{2}$	27 $\frac{1}{2}$	29 $\frac{1}{2}$	32 $\frac{1}{2}$	29 $\frac{1}{2}$	32 $\frac{1}{2}$	32 $\frac{1}{2}$	33 $\frac{1}{2}$	38	49	49	68 $\frac{1}{2}$
Width	24 $\frac{1}{2}$	24 $\frac{1}{2}$	25 $\frac{1}{2}$	26$\frac{1}{2}$	26$\frac{1}{2}$	26$\frac{1}{2}$	26$\frac{1}{2}$	26 $\frac{1}{2}$	27 $\frac{1}{2}$	27 $\frac{1}{2}$	29	29	29	29
Depth	24 $\frac{1}{2}$	24 $\frac{1}{2}$	25 $\frac{1}{2}$	26 $\frac{1}{2}$	26 $\frac{1}{2}$	26 $\frac{1}{2}$	26 $\frac{1}{2}$	27 $\frac{1}{2}$	27 $\frac{1}{2}$	27 $\frac{1}{2}$	29	29	29	29
Inside dimensions of liner (in.)	24 $\frac{1}{2}$	24 $\frac{1}{2}$	24 $\frac{1}{2}$	29 $\frac{1}{2}$	24 $\frac{1}{2}$	30 $\frac{1}{2}$	24 $\frac{1}{2}$	29 $\frac{1}{2}$	30 $\frac{1}{2}$	35 $\frac{1}{2}$	30 $\frac{1}{2}$	35 $\frac{1}{2}$	34 $\frac{1}{2}$	34 $\frac{1}{2}$
Height	19 $\frac{1}{2}$	19 $\frac{1}{2}$	22 $\frac{1}{2}$	22 $\frac{1}{2}$	22 $\frac{1}{2}$	25 $\frac{1}{2}$	22 $\frac{1}{2}$	22 $\frac{1}{2}$	25 $\frac{1}{2}$	25 $\frac{1}{2}$	28 $\frac{1}{2}$	39 $\frac{1}{2}$	39 $\frac{1}{2}$	59
Width	17	17	18 $\frac{1}{2}$	18$\frac{1}{2}$	18$\frac{1}{2}$	18$\frac{1}{2}$	18$\frac{1}{2}$	18$\frac{1}{2}$	18$\frac{1}{2}$	18$\frac{1}{2}$	19	19	19	19
Depth	17	17	18 $\frac{1}{2}$	18$\frac{1}{2}$	18$\frac{1}{2}$	18$\frac{1}{2}$	18$\frac{1}{2}$	18$\frac{1}{2}$	18$\frac{1}{2}$	18$\frac{1}{2}$	19	19	19	19
No. of doors	1	1	1	1	1	1	1	1	1	1	1	2	2	2

**Storage Capacity**

Gross volume (cu. ft.)	4.68	4.68	5.89	7.03	5.89	7.03	8.22	5.89	7.03	8.22	9.59	8.22	9.59	10.71	14.9	17.95	26.95
Nema net volume	4.22	4.22	5.29	6.43	5.29	6.35	7.54	5.13	6.17	7.36	8.73	6.58	7.82	9.03	12.68	15.25	23.32
No. of shelves (including bottom)	4	4	4	5	4	5	5	4	5	5	6	5	6	6	6	7	13
Nema shelf area (sq. ft.)	8.35	8.35	10.53	13.39	10.53	12.5	14.14	10.66	12.8	14.43	17.7	12.94	16.2	18.42	25.05	30.63	45.55

**Ice Cube Trays**

No. of single trays with metal grid	2	1	2	2	3	3	2	3	3	2	1	1	2	2	3
No. of Flexotrays	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0
No. of Dry Cube trays	0	0	0	0	0	0	1	1	1	1	1	1	2	3	4
No. of double metal	0	0	0	0	0	0	0	0	0	0	1	2	1	1	1
No. of triple metal	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
No. of cubes	42	42	63	63	84	84	81	108	108	81	108	108	162	189	243
Weight of cubes (lbs.)	3.4	3.4	5.1	5.1	6.8	6.8	8.25	11.0	11.0	13.75	16.5	16.5	25.75	28.5	34.0

**Thickness of Insulation (in.)**

Sides and top	2	2	2 $\frac{1}{2}$	3	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$								
Bottom	2 $\frac{1}{2}$	3	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$										

**Compressor Specifications**

Compressor capacity B.t.u. per hour 15° F. suction, 90° F. air	700	700	700	900*	900*	900*	1150	700*	900*	1150	1150	1150	1150	1400	1400	2400	2400
Motor size (hp.)	7/8	7/8	7/8	1 $\frac{1}{2}$													
Compressor speed (r.p.m.)	640	640	640	410	410	525	640	410	525	525	525	525	640	640	575	575	
Compressor bore (in.)	1 $\frac{1}{4}$																
Compressor stroke (in.)	1 $\frac{1}{2}$																
No. of cylinders	1 $\frac{1}{2}$																
Amount of lubricant in system (oz.)	19	19	19	26	26	19	26	26	26	26	26	26	26	32	32	32	32
Quantity of refrigerant in system (oz.)	45	45	50														

**Crosley**

Crosley Radio Corp., Cincinnati, Ohio

Model No. EA-35 EA-43 EA-55 E-43 E-55 E-70

**Cabinet Specifications**

Overall dimensions (in.)	48%	54%	57%	56%	57%	58%
Height	23%	23%	29	23%	29	32%
Width	24%	24%	25%	24%	25%	26%
Depth	24%	24%	25%	24%	25%	26%

**No. of doors**

1	1	1	1	1	1
---	---	---	---	---	---

**Storage Capacity**

Net food storage (cu. ft.)	3.5	4.3	5.51	4.3	5.51	7.05
Gross food storage (cu. ft.)	3.75	4.72	6.27	4.72	6.27	7.75
Net capacity, less door	...	...	...	...	...	6.27
Shelf area, less door	6.35	7.85	9.62	7.85	9.62	10.97
Shelf area outside of food compartment	...	...	1.2	1.6	1.9	...
No. of shelves	3	4	4	4	4	4
Total shelf area (sq. ft.)	7.5	9.15	11.6	9.15	11.6	14.9
Shelf area less door (sq. ft.)	6.35	7.85	9.62	7.85	9.62	10.97

**Ice Cube Trays**

No. of trays	2	3	4	3	4	5
No. of cubes produced	42	63	84	63	84	105
Weight of cubes (lbs.)	2.6	3.9	5.2	3.9	5.2	6.5

**Thickness of Insulation (in.)**

Top	2%	2%	2%	2%	2%	2%
Sides	2%	2%	3%	2%	3%	3%
Bottom	2%	2%	3%	2%	3%	3%

**Compressor Specifications**

Compressor capacity (lbs. I.M.E.) at zero gauge, 100° F. room temperature	100	100	100	100	100	110
Motor size (hp.)	1/2	1/2	1/2	1/2	1/2	1/2
Compressor speed (r.p.m.)	540	540	540	540	540	600
Compressor bore (in.)	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
Compressor stroke (in.)	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
No. of cylinders	1	1	1	1	1	1

Price, delivered and installed	\$ 99.50	117.00	145	135	157.50	185
Price with porcelain exterior	\$ 119.50	139.50	170	160	185	215
Weight, net	236	260	308	283	320	355

**Cabinet Materials**

Make of cabinet	Crosley & Rex	Finish	Cabinet finish, exterior	Lacquer
Material used for frame	Wood	Material used for breaker strip	Tinned	
Finish of shelves	Tinned	Material used for gasket	Rubber	
Material used for gasket	Miller	Make of insulation	Balsam Wool	
Make of gasket	Jarrow	Hardware	Crossley	

**Hardware**

Make of hardware	Crosley	Process of manufacture	Stamped	Basic metal of hardware	Brass
Finish of hardware	Chromium	Material	Argon	Make	Miller

**Major**

Major Appliance Corp., 14th floor, Merchandise Mart, Chicago, Ill.

Model No. L432 L526 P526 L628 P628 P856

**Cabinet Specifications**

Overall dimensions (in.)	50%	53%	52%	56	56	56
Height	25 1/2	26 1/2	26 1/2	30 1/4	30 1/4	30 1/4
Width	23 1/2	24 1/2	24 1/2	25 1/2	25 1/2	25 1/2

**Inside dimensions of liner (in.)**

Height	27 1/4	29 1/4	29 1/4	31 1/4	31 1/4	31 1/4
Width	19 1/2	20 1/2	20 1/2	23 1/2	23 1/2	23 1/2
Depth	15	16	16	15 1/2	15 1/2	15 1/2

**No. of doors**

1	1	1	1	1	2
---	---	---	---	---	---

**Storage Capacity**

Gross food storage (cu. ft.)	4.56	5.62	5.62	6.65	6.65	8.98
Net food storage (cu. ft.)	4.32	5.26	5.26	6.28	6.28	8.56
Total shelf area (sq. ft.)	9.27	10.49	10.49	12.77	12.77	16.57

**No. of shelves**

3	3	3	3 1/2	3 1/2	6
---	---	---	-------	-------	---

**Ice Cube Trays**

No. of trays	2	2	2	3	3	4
--------------	---	---	---	---	---	---

**No. of cubes produced**

63	84	84	112	112	140
----	----	----	-----	-----	-----

**Weight of cubes (lbs.)**

4 1/2	6	6	8	8	10
-------	---	---	---	---	----

**Thickness of Insulation (in.)**

Top	2	2 1/2	2 1/2	3	3	3
-----	---	-------	-------	---	---	---

**Bottom**

2	2	2 1/2	2 1/2	3	3	3
---	---	-------	-------	---	---	---

**Sides**

2	2 1/2	2 1/2	3	3

**Fairbanks-Morse**

Fairbanks-Morse Co., Beloit, Wis.

Model No.	AL-4	AL-5	AL-6	AP-5	AP-6
<b>Cabinet Specifications</b>					
Overall dimensions (in.)					
Height	55	58	60 $\frac{1}{4}$	58	60 $\frac{1}{4}$
Width	23 $\frac{3}{4}$	23 $\frac{3}{4}$	29 $\frac{1}{4}$	25 $\frac{1}{4}$	29 $\frac{1}{4}$
Depth	20 $\frac{1}{2}$	20 $\frac{1}{2}$	21 $\frac{1}{2}$	20 $\frac{1}{2}$	21 $\frac{1}{2}$
Inside dimensions of liner (in.)					
Height	26 $\frac{1}{2}$	29	30	29	30
Width	19 $\frac{1}{2}$	21	23 $\frac{1}{4}$	21	23 $\frac{1}{4}$
Depth	16 $\frac{1}{4}$	17	17 $\frac{1}{2}$	17	17 $\frac{1}{2}$
No. of doors	1	1	1	1	1
<b>Storage Capacity</b>					
Gross food storage (cu. ft.)	4.8	6.0	7.2	6.0	7.2
Net food storage (cu. ft.)	4.3	5.4	6.3	5.4	6.3
No. of shelves	3 $\frac{1}{2}$	4	4	4	4
Total shelf area (sq. ft.)	8.8	12.3	13.25	12.3	13.25
<b>Ice Cube Trays</b>					
No. of trays	4	4	6	4	6
No. of cubes produced	84	84	126	84	126
Weight of cubes (lbs.)	5	5	7 $\frac{1}{2}$	5	7 $\frac{1}{2}$
<b>Thickness of Insulation (in.)</b>					
Top	3	3	3	3	3
Sides	2 $\frac{1}{2}$	3	3	2 $\frac{1}{2}$	3
Bottom	2 $\frac{1}{2}$	3	3	3	3
<b>Compressor Specifications</b>					
Compressor capacity I.M.E. (lbs.)	98.4	98.4	98.4	98.4	98.4
Motor size (hp.)	1 $\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$
Compressor speed (r.p.m.)	1725	1725	1725	1725	1725
Compressor bore (in.)	1 $\frac{1}{16}$	1$\frac{1}{16}$	1$\frac{1}{16}$	1$\frac{1}{16}$	1$\frac{1}{16}$
Compressor stroke (in.)	33 $\frac{1}{64}$	33$\frac{1}{64}$	33$\frac{1}{64}$	33$\frac{1}{64}$	33$\frac{1}{64}$
No. of cylinders	2	2	2	2	2
Price, f.o.b.	\$124.50	159.50	199.50	184.50	224.50
Weight, net (cabinet only)	153	187	233	187	233

**Dayton**

Dayton Refrigeration Corp. (Heinz &amp; Munschauer), Buffalo, N. Y.

Model No.	434	5-B-2	6-B-3	7-B-4	8-B-4	283-P
<b>Cabinet Specifications</b>						
Overall dimensions (in.)						
Height						
Height	53	56	56	56	56	58
Width	23 $\frac{1}{2}$	24 $\frac{1}{2}$	28 $\frac{1}{2}$	31 $\frac{1}{2}$	35 $\frac{1}{2}$	33 $\frac{1}{2}$
Depth	20 $\frac{1}{2}$	24 $\frac{1}{2}$	24 $\frac{1}{2}$	24 $\frac{1}{2}$	24 $\frac{1}{2}$	23 $\frac{1}{2}$
Inside dimensions of liner (in.)						
Height	26 $\frac{1}{2}$	29 $\frac{1}{2}$	29 $\frac{1}{2}$	29 $\frac{1}{2}$	29 $\frac{1}{2}$	30
Width	18	18 $\frac{1}{2}$	22 $\frac{1}{2}$	25 $\frac{1}{2}$	29 $\frac{1}{2}$	26
Depth	15 $\frac{1}{2}$	17				
No. of doors	1	1	1	1	2	2
<b>Storage Capacity</b>						
Gross food storage (cu. ft.)	4.32	5.45	6.65	7.70	8.70	7.54
Net food storage (cu. ft.)	4.0	5.02	6.03	7.04	8.04	7.05
No. of shelves	3	6	6	6	7	5
Total shelf area (sq. ft.)	6.5	10.53	12.83	15.075	15.83	12.8
<b>Ice Cube Trays</b>						
No. of trays	2	2	3	4	4	3
No. of cubes produced	56	56	84	112	112	84
Weight of cubes (lbs.)	5	5	7 $\frac{1}{2}$	10	10	7 $\frac{1}{2}$
<b>Thickness of Insulation (in.)</b>						
Top	2	3	3	3	3	3
Side	2	3	3	3	3	3
Bottom	2	3	3	3	3	3
<b>Compressor Specifications</b>						
Compressor capacity (lbs.) I.M.E.	85	85	85	85	85	85
Motor size (hp.)	1 $\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$
Compressor speed (r.p.m.)	800	800	800	800	800	800
Compressor bore (in.)	1 $\frac{1}{16}$	1$\frac{1}{16}$	1$\frac{1}{16}$	1$\frac{1}{16}$	1$\frac{1}{16}$	1$\frac{1}{16}$
Compressor stroke (in.)	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1 $\frac{1}{4}$
No. of cylinders	1	1	1	1	1	1
Weight, total shipping (lbs.)	268	327	341	375	390	390

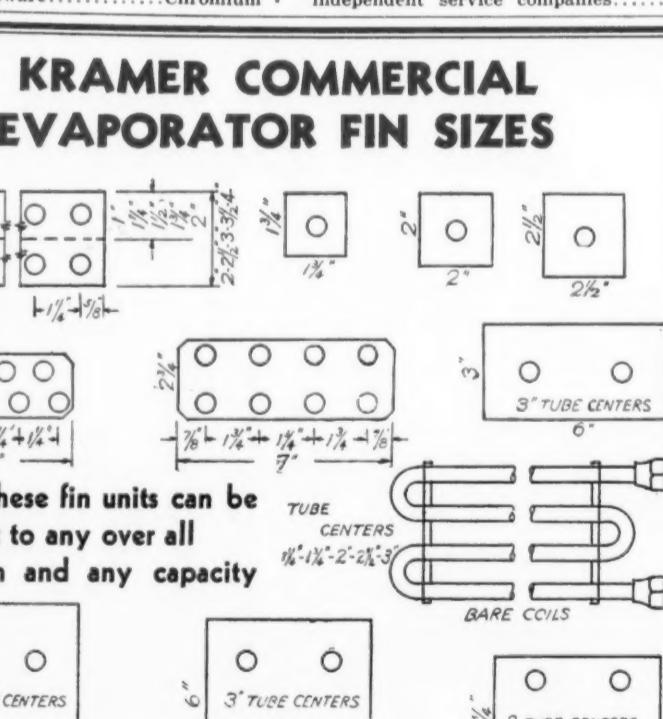
Cabinet Materials	Refrigerant					
Make of cabinet	Sulphur dioxide					
Material used for frame	Amount in system					
Finish of shelves	Models 6-B-3 & 283-P—4 lbs., 6 oz.; 7-B-4 & 8-B-4—5 lbs.; others—3 lbs., 6 oz.					
Material used for breaker strip	Tinned					
Model 4-A-2—Masonite; others—Bakelite	Lubrication					
Material used for gasket	Brand of compressor lubricant					
Make of gasket	Suniso					
Make of insulation	No. 3					
Model 4-A-2—Fibrocil; others—Dry-Zero	Quantity in system					
Finish	How often should motor be oiled					
Cabinet finish (exterior)	Every 3 months					
Cabinet finish (interior)	Control					
Hardware	Make of hardware					
Make of hardware	Ranco					
Process of manufacture	Temperature					
Basic metal of hardware	Temperature regulation method					
Finish of hardware	Manual					
Motor	How defrosted					
Make of motor	Shut down unit or automatic					
Type of motor	Evaporator					
Compressor	Make of evaporator					
Make of condenser	Mullins					
Type of cooling	Evaporator construction					
Type of condenser	Shell					
Condenser	Metal used					
Make of condenser	Steel, finished in porcelain					
Type of condenser	Type of refrigerant control					
Condenser	Low side float					
Condenser	Type of ice cube trays					
Condenser						

**Liberty**

	A-4	D-4	D-5	D-6	D-75	P-85	P-10
Model No.	..	..	P-5	P-6	P-75	P-85	P-10
<b>Cabinet Specifications</b>							
Overall dimensions (in.)							
Height	53 $\frac{1}{2}$	56 $\frac{1}{2}$	60 $\frac{1}{2}$	63 $\frac{1}{2}$	63 $\frac{1}{2}$	64 $\frac{1}{2}$	67 $\frac{1}{2}$
Width	23 $\frac{1}{2}$	25 $\frac{1}{2}$	26 $\frac{1}{2}$	30 $\frac{1}{2}$	34 $\frac{1}{2}$	36 $\frac{1}{2}$	42 $\frac{1}{2}$
Depth	20 $\frac{1}{2}$	20 $\frac{1}{2}$	22 $\frac{1}{2}$	22 $\frac{1}{2}$	23 $\frac{1}{2}$	27 $\frac{1}{2}$	25 $\frac{1}{2}$
Inside dimensions of liner (in.)							
Height	26 $\frac{1}{2}$	26 $\frac{1}{2}$	29 $\frac{1}{2}$	32 $\frac{1}{2}$	32 $\frac{1}{2}$	31 $\frac{1}{2}$	34 $\frac{1}{2}$
Width	19 $\frac{1}{2}$	21	19 $\frac{1}{2}$	23 $\frac{1}{2}$	27 $\frac{1}{2}$	30	35
Depth	15 $\frac{1}{2}$	15 $\frac{1}{2}$	16	16	16 $\frac{1}{2}$	20 $\frac{1}{2}$	18 $\frac{1}{2}$
No. of doors	1	1	1	1	1	2	2
<b>Storage Capacity</b>							
Gross food storage (cu. ft.)	4.68	4.65	5.72	7.05	8.32	11.60	13.64
Net food storage (cu. ft.)	4.03	4.00	5.10	6.20	7.50	8.50	10.23
No. of shelves	3	3	6	4	4	5	5
Total shelf area (sq. ft.)	8.42	8.95	12.45	12.85	15.15	14.85	17.00
<b>Ice Cube Trays</b>							
No. of trays	2	2	3	3	4	4	5
No. of cubes produced	56	56	84	84	112	112	140
Weight of cubes (lbs.)	3.50	3.50	5.25	5.25	7.00	7.00	8.75
<b>Thickness of Insulation (in.)</b>							
Top, sides & bottom	2	2	2 $\frac{1}{2}$	3	3	3	3
<b>Compressor Specifications</b>							
Compressor capacity I.M.E. (lbs.)	100	100	100	113	113	125	125
Motor size (hp.)	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Compressor speed (r.p.m.)	360	360	360	395	395	425	425
Compressor bore (in.)	1 $\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$	1$\frac{1}{2}$
Compressor stroke (in.)	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1$\frac{1}{4}$	1 $\frac{1}{4}$
No. of cylinders	1	1	1	1	1	1	1
Quantity of refrigerant in system (lbs.)	1.2	1.2	1.3	1.3	1.5	1.5	1.6
Weight, total shipping (lbs.), lacquer	250	290	349	374	406	..	..
Porcelain models	..	..	368	385	426	545	625
Price, installed, lacquer models	\$140	146	192	220	265	..	..
Porcelain models	..	..	215	250	295	395	500

**Zerozone**

	554	664	F664	774	P774	884	P884
<b>Cabinet Specifications</b>							
Overall dimensions (in.)							
Height	55 $\frac{1}{2}$	61 $\frac{1}{2}$	61 $\frac{1}{2}$	63 $\frac{1}{2}$	63 $\frac{1}{2}$	64 $\frac{1}{2}$	64 $\frac{1}{2}$
Width	24	26	26	31 $\frac{1}{2}$	31 $\frac{1}{2}$	35 $\frac{1}{2}$	35 $\frac{1}{2}$
Depth	20 $\frac{1}{2}$	21 $\frac{1}{2}$	21 $\frac{1}{2}$	23 $\frac{1}{2}$	23 $\frac{1}{2}$	24 $\frac{1}{2}$	24 $\frac{1}{2}$
Inside dimensions of liner (in.)							
Height	26	31	31	30 $\frac{1}{2}$	30 $\frac{1}{2}$	30 $\frac{1}{2}$	30 $\frac{1}{2}$
Width	20 $\frac{1}{2}$	20 $\frac{1}{2}$	20 $\frac{1}{2}$	24 $\frac{1}{2}$	24 $\frac{1}{2}$	27 $\frac{1}{2}$	27 $\frac{1}{2}$
Depth	14 $\frac{1}{2}$	15 $\frac{1}{2}$	15 $\frac{1}{2}$	16 $\frac{1}{2}$	16 $\frac{1}{2}$	17 $\frac{1}{2}$	17 $\frac{1}{2}$
<b>Storage Capacity</b>							
Gross food storage (cu. ft.)	4.50	5.90	5.90	7.10	7.10	8.46	8.46
Net food storage (cu. ft.)	4.00	5.40	5.40	6.50	6.50	7.60	7.60
No. of shelves	4	4	4	4	4	4	4
Total shelf area (sq. ft.)	8.3	9.9	9.9	12.4	12.4	14.1	14.1
<b>Ice Cube Trays</b>							
No. of trays	2	3	3	3	3	4	4
No. of ice cubes produced	66	84	84	77	77	105	105
Weight of ice cubes (lbs.)	6	8	8	7 $\frac{1}{2}$	7 $\frac{1}{2}$	10	10
<b>Thickness of Insulation (in.)</b>							
Top	2	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	4	4
Sides	2	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	4	4
Bottom	2	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	4	4
<b>Compressor Specifications</b>							
Compressor capacity I.M.E. (lbs.)	100	100	100	100	100	150	150
Motor size (hp.)	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Compressor speed (r.p.m.)	360	360	360	360	360	360	360
Compressor bore (in.)	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2	2
Compressor stroke (in.)	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$
No. of cylinders	1	1	1	1	1	1	1
<b>Cabinet Materials</b>							
Make of cabinet	Lima Sheet Metal						
Material used for frame	Steel & wood						
Finish of shelves	Tinned						
Material used for breaker strip	Composition						
Material used for gasket	Molded rubber						
Make of insulation	Zerolite						
<b>Finish</b>							
Cabinet finish (exterior)	P models—porcelain; all others—lacquer						
Cabinet finish (interior)	Porcelain						
<b>Compressor</b>							
Make of compressor	Zerozone						
Type of system	Conventional						
Type of compressor	Reciprocating						
Compressor drive	Belt						
Type of shaft seal	Bellows						
Location of compressor	Below						
<b>Lubrication</b>							
Brand of compressor lubricant	Shell No. 3						
Quantity in system	$\frac{5}{8}$ pts.						
How often should motor be oiled	Every 6 months						
<b>Hardware</b>							
Process of manufacture	Forgings & stampings						
Basic metal of hardware	Brass						
Finish of hardware	Chromium						



**TRENTON AUTO RADIATOR WORKS**  
Main Offices and Factory, TRENTON, NEW JERSEY<br

**Apex**

Apex Electrical Mfg. Co., Cleveland, Ohio

	SSL4	SSL5	SSL6	DTL6	SSL7	DTL7	DTL8
<b>Cabinet Specifications</b>							
Overall dimensions (in.)							
Height	53 <sup>1</sup> / <sub>4</sub>	54 <sup>1</sup> / <sub>4</sub>	55 <sup>3</sup> / <sub>4</sub>	55 <sup>3</sup> / <sub>4</sub>	60	60	64 <sup>1</sup> / <sub>4</sub>
Width	23	25 <sup>1</sup> / <sub>2</sub>	33 <sup>1</sup> / <sub>4</sub>	33^{1}/_{4}	33^{1}/_{4}	33^{1}/_{4}	33^{1}/_{4}
Depth	19 <sup>1</sup> / <sub>2</sub>	23 <sup>1</sup> / <sub>2</sub>	25 <sup>1</sup> / <sub>2</sub>	25^{1}/_{2}	25^{1}/_{2}	25^{1}/_{2}	25^{1}/_{2}
Inside dimensions of liner (in.)							
Height	26 <sup>3</sup> / <sub>8</sub>	26 <sup>1</sup> / <sub>4</sub>	26	26	30 <sup>1</sup> / <sub>4</sub>	30 <sup>1</sup> / <sub>4</sub>	34 <sup>1</sup> / <sub>4</sub>
Width	19	19 <sup>1</sup> / <sub>2</sub>	25 <sup>1</sup> / <sub>4</sub>	25^{1}/_{4}	25^{1}/_{4}	25^{1}/_{4}	25^{1}/_{4}
Depth	15 <sup>1</sup> / <sub>4</sub>	17	18	18	18	18	18
No. of doors			1				
<b>Storage Capacity</b>							
Gross food storage (cu. ft.)	4.5	5.1	6.9	6.9	8.0	8.0	9.1
Net food storage (cu. ft.)	4.0	4.5	6.1	6.1	7.1	7.1	8.1
No. of shelves	4	5	7	7	7	7	8
Total shelf area (sq. ft.)	6.7	7.8	12.4	12.4	12.4	12.4	14.2
<b>Ice Cube Trays</b>							
No. of trays	2	2	3	3	4	4	4
No. of rubber trays	0	1	1	1	1	1	1
No. of cubes produced	56	84	84	84	112	112	140
Weight of cubes (lbs.)	3 <sup>1</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>4</sub>	7	7	8 <sup>3</sup> / <sub>4</sub>
<b>Thickness of Insulation (in.)</b>							
Top	2	2	3	3	3	3	3
Sides	1 <sup>1</sup> / <sub>4</sub>	2	3	3	3	3	3
Bottom	2 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>2</sub>	3^{1}/_{2}	3^{1}/_{2}	3^{1}/_{2}	3^{1}/_{2}
<b>Compressor Specifications</b>							
Compressor capacity I.M.E. (lbs.)	95	95	95	135	110	135	135
Motor size (hp.)	1 <sup>1</sup> / <sub>2</sub>	1^{1}/_{2}	1^{1}/_{2}	1^{1}/_{2}	1^{1}/_{2}	1^{1}/_{2}	1^{1}/_{2}
Compressor speed (r.p.m.)	460	460	460	350	520	350	350
Compressor bore (in.)				1 <sup>1</sup> / <sub>2</sub>			
Compressor stroke (in.)				1 <sup>1</sup> / <sub>2</sub>			
No. of cylinders	1	1	1	2	1	2	2
Quantity of refrigerant in system (lbs.)	4	4	4 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>2</sub>	5	5	5 <sup>1</sup> / <sub>4</sub>
Quantity of lubricant in system (oz.)	6	6	6	9	6	9	9
Weight, net (lbs.)	250	281	338	361	355	378	400
Price, f.o.b. factory	\$127.50	160	195	185	225	250	

**Cabinet Materials**

Make of cabinet...SSL4—Erie Art Metal; all other—Reed Material used for frame...Steel & wood Finish of shelves...Tinned Material used for breaker strip...Tylac Material used for gasket...Rubber Make of insulation...Balsam-Wool

**Finish**

Cabinet finish (exterior)...S models—lacquer; D models—porcelain Cabinet finish (interior)...Porcelain

**Hardware**

Make of hardware...Grand Rapids Brass Process of manufacture...SSL4 & SSL5—stamped; others—forged Basic metal of hardware...Brass Finish of hardware...Chromium

**Compressor**

Make of compressor...Apex Type of system...Conventional Type of compressor...Reciprocating Compressor drive...V-belt Type of shaft seal...Sylphon Location of compressor...Below

**Refrigerant**

Refrigerant used...Sulphur dioxide

**Motor**

Make of motor...Apex Type of motor...Capacitor Control

**Control**

Make of control...S & D models—General Electric; others—Penn Type of control...Temperature Temperature regulation method...Manual How defrosted...Semi-automatic

**Lubrication**

Brand of compressor lubricant...Sun How often should motor be oiled...Semi-annually

IF IT'S RUBBER—  
MILLER WILL FIND  
YOU THE ONE  
BEST ANSWER

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TEN years of close cooperation have made Miller's technical staff part of the electric refrigeration industry. We know your problems. We have helped solve many of them. Sponge rubber, for instance. Improvements developed by Miller are performing valuable service for leading manufacturers, in new uses of sponge rubber. Our consulting service is yours for the asking. Just write Miller Rubber Products Co., Inc., Akron, Ohio.

OUR EXPERIENCE  
WILL SAVE YOU  
TIME AND MONEY

**Miller**

## Edison Institute Opens Convention Monday

(Concluded from Page 1, Column 2)

Co., has accepted an invitation to present the facts and offer practical solutions on "Facing Competition," at this session. A. L. Billingsley, president, Fuller & Smith & Ross, Inc., Cleveland advertising agency, will discuss the "Economics of an Electrical Home."

James E. Davison, president of the Nebraska Power Co. and chairman of the national Electric Refrigeration Bureau, will talk on "Dealer Coordination as an Aid in Load Building." George E. Whitwell, chairman of the sales committee of the institute and vice president of the Philadelphia Electric Co., will discuss "The Business of Getting Business."

The first general session of the convention will convene Tuesday morning, with President George B. Cortelyou delivering the opening address. At this session a "Plan for Determining Costs of Service in the Electrical Industry" will be presented by Hudson W. Reed, management engineer, United Gas Improvement Co., Philadelphia.

The Wednesday evening session will include addresses by Floyd L. Carlisle, member of the board of trustees of the institute and chairman of the boards of the Niagara Hudson Corp. and the Consolidated Gas Co. of New York, and Bernard F. Weadock of the institute. Mr. Weadock's address will be a discussion of holding companies.

The concluding general session on Thursday will open with a paper "Progressive Engineering Pays Its Way," by Philip Sporn, vice president, American Gas & Electric Co., New York. J. L. Hecht, Public Service Co. of Northern Illinois, will speak on "Adjusting Operations to Present Trends." F. A. Newton, Commonwealth & Southern Corp., will present a discussion on "Commodity Prices" and their relation to costs of production and electricity.

At the closing session winners of the several prize awards administered by the institute will be announced.

### Philadelphia Store Sets Up Kitchen Planning Dept.

PHILADELPHIA — Peirce-Phelps Co., Inc., Philadelphia distributor of Stewart-Warner electric refrigerators and Colonial-Romance ensemble kitchens, has set up a resale operation on refrigerators and ensemble kitchens in the housefurnishing department of the Strawbridge & Clothier store here.

This operation is in charge of William Bolger, sales supervisor, who directs a staff of six salesmen. These salesmen are kitchen planning consultants who spend half of their time in the prospect's home, determining the most suitable size and makeup of ensemble for her kitchen.

**Grunow**

General Household Utilities Co., 2638 N. Crawford Ave., Chicago, Ill.

Model No.	46	54D	65D	65SD	80D	80SD
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Cabinet Specifications						
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Overall dimensions (in.)						
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Height	54	56 <sup>1</sup> / <sub>2</sub>	58 <sup>1</sup> / <sub>2</sub>	58 <sup>1</sup> / <sub>2</sub>	62 <sup>1</sup> / <sub>2</sub>	62 <sup>1</sup> / <sub>2</sub>
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Width	24 <sup>1</sup> / <sub>2</sub>	24 <sup>1</sup> / <sub>2</sub>	29 <sup>1</sup> / <sub>2</sub>	29 <sup>1</sup> / <sub>2</sub>	31 <sup>1</sup> / <sub>2</sub>	31 <sup>1</sup> / <sub>2</sub>
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Depth	21 <sup>1</sup> / <sub>2</sub>	25 <sup>1</sup> / <sub>2</sub>				
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Inside dimensions of liner (in.)						
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Height	31 <sup>1</sup> / <sub>2</sub>	32 <sup>1</sup> / <sub>2</sub>	32 <sup>1</sup> / <sub>2</sub>	36	36	
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Width	19 <sup>1</sup> / <sub>2</sub>	23	23	25	25	
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Depth	17<sup>1</sup>/<sub>2</sub>	16<sup>1</sup>/

## PATENTS

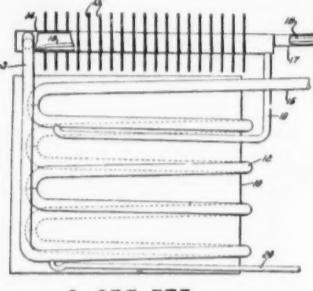
Issued May, 15, 1934

1,958,502. RELEASEABLE ICE CUBE TRAY. Alexander S. Volpin, Houston, Tex. Application Oct. 4, 1932. Serial No. 636,100. 12 Claims. (Cl. 62—108.5)

12. An ice tray including means to loosen the tray from the freezing chamber, said means being extensible and forming a lever to pry the tray loose from the freezing chamber.

1,958,513. REFRIGERATOR. William R. Hainsworth, Larchmont, N. Y., assignor to Electrolux Servel Corp., New York, N. Y., a corporation of Delaware. Application June 7, 1933. Serial No. 674,627. 5 Claims. (Cl. 62—95.)

4. A cooling element comprising, a pipe coil having upper and lower sections both adapted for downward flow of inert gas



1,958,573

and continuously downward flow of liquid therethrough, the lower end of the lower coil section being connected to the upper end of the upper coil section for circulation of gas therethrough in series, a connection for liquid from the lower end of said upper coil section to the upper end of said lower coil section, and a connection supplying liquid cooling fluid to the upper end of said upper section.

1,958,794. REFRIGERATOR CAR. Otto Luhr, Chicago, Ill., assignor to Anna Eisenmann, Chicago, Ill. Application Dec. 13, 1929. Serial No. 413,713. 20 Claims. (Cl. 62—117.)

1. In a mechanical refrigerating system for railway cars of the refrigerator type, the combination with means for compressing a refrigerating fluid; of condenser means through which the compressed fluid is passed; a plurality of circulating coils arranged in series within the car at one end; means for conducting the fluid from said condenser means to the bottom of the first ones of the series of said circulating coils; pressure reducing means between said condenser and said coils; a brine tank within the car, the first ones in the series of said circulating coils being disposed exteriorly of the brine tank and the last of the series within the tank.

1,958,805. REFRIGERATING SYSTEM. Charles L. Sieloff, Wellston, Mo., assignor to Sieloff Packing Co., St. Louis, Mo., a corporation of Missouri. Application Feb. 18, 1933. Serial No. 656,982. 6 Claims. (Cl. 62—116.)

1. In a refrigerating system, the combination of a portable base, a longitudinally rectangular box supported by said base constituting a liquid accumulating chamber, a longitudinal series of pipes supported by the top wall of said box and extending therewith, a spray nozzle located in the upper end of each of said pipes, a second series of pipes arranged in a longitudinal series parallel with said first named pipes and supported by the top wall of said box and extending therewith, a baffle in said base below and preventing spray from entering said second series of pipes, and a longitudinal baffle wall located between said two series of pipes.

1,958,832. REFRIGERATOR. William Mauthe, Fond du Lac, Wis., assignor to Sanitary Refrigerator Co., Fond du Lac, Wis., a corporation of Wisconsin. Application Dec. 18, 1933. Serial No. 702,988. 6 Claims. (Cl. 62—46.)

1,958,890. COOLING APPARATUS. Benjamin S. Foss, Brookline, and Samuel M. Anderson, Sharon, Mass., assignors to B. F. Sturtevant Co., Boston, Mass. Application March 27, 1930. Serial No. 439,278. 17 Claims. (Cl. 62—114.)

1. Food cooling apparatus comprising means for producing a current of gas, means for cooling said gas, a cooling



1,958,890

chamber through which said gas is circulated, means for introducing food into said chamber and means for preventing the escape of said gas during introduction of food.

1,958,899. HEAT TRANSFER APPARATUS. Jesse Edward MacAdams, Albany, Ga. Application June 30, 1931. Serial No. 548,003. 2 Claims. (Cl. 257—242.)

1. A heat transfer device for the evaporation of liquid comprising a container composed of two opposed walls arranged relatively close together and forming a sheet-like fluid chamber between them, said chamber having an opening for the introduction of liquid formed at a point along the lower edge of the container, a distribution channel extending along said lower edge, the spacing of the walls being such that the inlet of the fluid to the sheet-like space from the distribution channel shall be so small as to allow free entrance only of such an amount of fluid as will be evaporated in its passage to the upper edge of the container, the space between the walls being gradually widened upward to provide for the free flow of vapor toward the upper por-

tion of the container, said container having a gas collecting channel and discharge opening at some point close to the upper end thereof.

1,959,003. DEVICE FOR PRODUCING HOMOGENEOUS OR INTEGRATED ARTIFICIAL ICE COMMERCIALLY. William Newcomb, New York, N. Y. Re-filed for abandoned application Serial No. 699,331, March 18, 1924. This application May 13, 1929. Serial No. 362,737. Renewed March 23, 1933. 4 Claims. (Cl. 62—157.)

### Hostess School Brings 7 Kelvinator Sales

KALAMAZOO, Mich.—Hostess schools held for the benefit of church organ funds are producing results in the territory covered by H. L. North, local Kelvinator distributor.

A recent hostess school held under the auspices of the Marathy Radio & Battery Shop, Coldwater, Mich., and the Ladies Auxiliary of the Methodist Church for the benefit of the latter's organ fund resulted in seven Kelvinator refrigerator sales the following week, besides bringing to light numerous prospects and netting the dealer 20½ in. of publicity in the Coldwater papers.

Each Kelvinator sale made to a member of the congregation adds \$5 to the organ fund.

### Leonard Appoints 4 New Distributors

DETROIT—Four new distributors were added to the selling organization of the Leonard Refrigerator Co. last month, company officials announced.

The new distributors are Moore & Stewart, Inc., Gastonia, N. C.; Bennett Radio Co., Columbus, O.; Klaus Radio & Electric Co., Peoria, Ill.; and Motor Equipment Co., Salt Lake City, Utah.

### G-E Introduces Sales Coach in England

LONDON, England—The General Electric sales coach, which has been featured by General Electric distributors and dealers in the United States for the past two years, has just been introduced in England for the promotion of G-E appliances by International Refrigerator Co., Ltd., G-E outlet, England.

The "G-E mobile exhibition coach" as it is known in England had a prominent place on the International Refrigerator Co.'s program at a dealer convention held last month.

### Pender Conducts Cold Cookery Show

LYNN, Mass.—R. T. Pender, Inc., Kelvinator distributor here, conducted cold cooking demonstrations at the Lynn Progress Exposition held May 7 to 12.

Mrs. Carolyn Ely, with the factory branch of Kelvinator Sales Corp. at Cambridge, Mass., conducted the cooking demonstrations for the distributor.

### 10 Makes Exhibited at Rhode Island Show

PROVIDENCE, R. I.—Ten makes of refrigerators were exhibited at a show held May 14 to 19 under sponsorship of the Electric Refrigeration Bureau of Rhode Island, with several utilities cooperating. Makes at the show were Copeland, Crosley, Frigidaire, Grunow, General Electric, Norge, Kelvinator, Leonard, Liberty, and Westinghouse.

Besides using conventional advertising media to announce the show, the bureau placed notices on milk bottle jackets, sent 100,000 of them to Rhode Island homes, according to H. E. Dawson, executive manager of the bureau.

### Gibson Distributor and Theaters Cooperate

ALBANY, N. Y.—As a part of its summer sales promotion activity, Capital Distributing Corp., Gibson distributor here, is cooperating with Warner Bros. theaters in this locality in display and advertising of Gibson refrigeration.

Refrigerator illustrations and announcement that the old ice box may be used as a down payment on a Gibson accompany display advertisements of the current movie attractions at local Warner houses. Attempts will be made to secure similar tie-ins in other towns in the distributor's area, according to Max E. Hegleman, sales manager.

### Cumberland Power Opens New Display Room

PORTLAND, Me.—Cumberland County Power and Light Co., Kelvinator distributor in this territory, has recently opened a new electric appliance display room here.

### Cole's White Sox Win Retail Drive

NEW YORK CITY—In connection with General Electric Co.'s current All Star Discovery Drive, Rex Cole, Inc., G-E distributor here, staged a local campaign in its retail department which ran from April 2 to 30.

The department's 10 divisions were divided into two teams. The White Sox team, which won the contest, was comprised of the Bay Ridge, Jamaica, Queens Village, Brooklyn, and Flatbush divisions and was captained by W. F. Bishop, assistant manager of the retail department. Rival team, the Red Sox, included the Flushing, Long Island, Staten Island, Manhattan, and Bronx divisions. P. H. Hichborn, manager of the retail department, was captain of that team. Both teams realized more than 100 per cent of their quotas.

Branch managers of all divisions were divided into two "flying squads," one squad for each team. Each squad traveled from division to division of its own team, spending two days at each branch. Squad members went into the field with the salesmen to canvass and aid in closing sales.

On May 7, Branch Manager Charles W. Wurm and his Bay Ridge division, the highest division of the winning team, were guests at a dinner given by Mr. Cole at his Seven League Farm in Bedford, N. Y.

### Sampson Uses Card to Combat Price Haggling

CHICAGO—Sampson Electric Co., Norge distributor here, has prepared, both in easel card and door handle tag form, a card asking an all around square deal for the consumer, the merchant, and the worker, the card being designed to overcome the price haggling tactics of some prospects.

Says the card:

"For your convenience the sale price of this particular model is plainly marked. It is a reasonable one for a product of such high quality and allows the dealer from whom you buy your Norge, only a fair profit."

"Please don't ask your dealer to sacrifice any portion of that profit because he can't stay in business without it and because by doing so you jeopardize the jobs of those people now employed by him at fair wages."

"Please bear in mind we can, each of us, do our bit to help hasten our National Recovery if we will remember always, that the New Deal calls for a Square Deal for all."

### Sylvanus Opens 'Model' Dealer Showroom

SOUTH BEND, Ind.—C. M. Sylvanus, General Electric appliance dealer here, has just opened a "model" three-story dealer showroom and office building here.

A kitchen institute and meeting room are being installed on the second floor. The long narrow main floor showroom is replete with G-E refrigerator, range, dishwasher, and laundry equipment models. Arcade-type windows provide ample space for window display.

Mr. Sylvanus was formerly in charge of all Studebaker motor car operations in countries south of the equator.

### Keystone Makes 5 Sales At Store's Food Show

SCRANTON, Pa.—An exhibit of refrigerators and other household appliances by Keystone Appliances, Inc., at the Economy Stores Food Show held here recently resulted in the sale of five refrigerators, according to W. C. Jones, Keystone sales promotion manager.

### 72 Leads Result from Cooking School

MT. CARMEL, Ill.—A General Electric cooking school, productive of 36 prospects for refrigerators, 24 for ranges, nine for dishwashers and three for complete kitchens, was recently staged in a local theatre by the Mt. Carmel Public Utility Co. and the Wabash Electric Co.

Mrs. E. Lee Smith conducted the program which was attended by 291 women.

### Cramer-Krasselt Gets Metal Ware Account

MILWAUKEE—Cramer-Krasselt Co., agency handling Norge advertising, recently secured as a new client the Metal Ware Corp., manufacturer of household appliances in Two Rivers, Wis.

### Kramer Commercial Evaporators

All copper hot tinned construction, or copper fin steel tube for ammonia systems. Also all steel hot galvanized for ammonia. Made in 10 different fin sizes—various fin spacings—to any over all dimensions, and to required capacities.

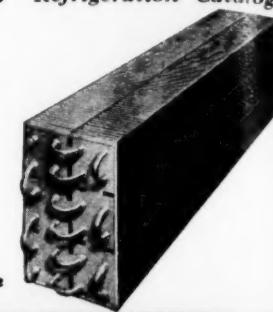
#### SEE OTHER AD IN THIS ISSUE

Note number of variations in fin sizes of Commercial Evaporators

#### TRENTON AUTO RADIATOR WORKS

210-212 West 65th Street TRENTON N. J. 5114 Liberty Avenue Pittsburgh, Pa.

Send for KRAMER Refrigeration Catalogs



### STARR FREEZE OUTSTANDING PERFORMANCE attested by satisfied users — EVERYWHERE!

Sturdy Condensing Units from 80 to 2868 Lbs. I.M.E., and all other commercial refrigeration equipment—Wall type cases with machinery—A beautiful household line of modern, conservative styles—Write for full data.

#### THE STARR COMPANY

Richmond, Indiana (factory) Since 1927

1344 S. Flower St., Los Angeles, Calif.



### MODEL 76 WATER VALVE

This Solenoid Valve will control full ½" or ¾" flow of water for air conditioning. A very small amount of water passes through pilot valve and acts on diaphragm which causes main valve to open. All the solenoid must do is open and close the small pilot valve. Uses only 9 W. per hour. Write for details.

#### AUTOMATIC PRODUCTS CO.

121 N. Broadway

Milwaukee, Wis.

### COPELAND REPAIRS—REPLACEMENTS

#### REPAIRS

B & B Household Controls.....	\$2.50	Howell Special Capacitor Type.....	\$11.00
Penn Household Controls.....	2.50	1 ½ HP Refrigerator Motor.....	4.50
Penn Commercial Controls.....	4.50	Amer. Rad. Household Exp. Valve.....	7.50
Amer. Rad. Household Exp. Valve.....	2.50	Amer. Rad. Multiple Exp. Valve.....	3.50
Amer. Rad. Multiple Exp. Valve.....	3.50	Penn Commercial Controls.....	\$8 & \$12.00
Apx Water Regulating Valve.....	3.50	Iso Butane (Freezol) Per lb.....	1.25
Penn Water Regulating Valve.....	3.50	Methyl Chloride, Per lb.....	.70

We also carry a complete stock of Gilmer Belts, Penn Water Regulating Valves, Glass Defrosting Trays, Lead and Fibre Gaskets, Etc. WRITE FOR PRICES.

Forty Eight Hour service on repairs, immediate shipment on replacements. All Repairs and Parts guaranteed to be free from defects in Workmanship, and Material for ONE YEAR.

#### REFRIGERATION SERVICE LABORATORIES, INC.

418-20 Rush Street

### Automatic Oil Separators

#### PRESSURE WATER REGULATING VALVES

#### HIGH SIDE FLOATS—EXPANSION VALVES

#### FILTERS—STRAINERS—DRIVERS

#### HYDRON BELLOWS—LUBRICANTS

#### SOFT SEAT PACKLESS VALVES

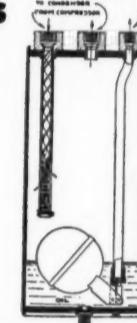
#### AND OTHER ACCESSORIES

#### WRITE

#### RILEY ENGINEERING CORP.

919 Holden Ave.

Detroit, Mich.



### Radial Dual Control Beer Cooler

Installs in any fixture.

Uses any refrigerant.

## QUESTIONS

### Easy-Way Ice Cream Freezer

No. 1622 (Manufacturer, Pennsylvania)—"We noted in the April 25 issue of ELECTRIC REFRIGERATION NEWS, a writeup on an ice cream freezing device that fits into the freezing compartment of a household refrigerator. The equipment is called the Easy-Way Freezer, and it is manufactured by the Easy-Way Co., Chicago.

"We are interested in obtaining information on this equipment, and would appreciate if you could advise us their address in Chicago, and whether or not they have a distributor or representative in Philadelphia."

No. 1623 (Dealer, Oregon)—"On the front page of the April 25 issue of ELECTRIC REFRIGERATION NEWS there was described the Easy-Way Freezer for freezing ice cream in electric refrigerators. This article stated that this freezer was manufactured by the Easy-Way Co., Chicago. We have written to these people but our letter was returned.

"Please give us the correct address of these people or forward this letter to them. We want prices and the agency for this freezer."

Answer: This is a new product and a new firm, but the organizers are reputable people with long experience in the manufacturing of ice cream machinery. Address: 432 Marquette Road, Chicago, Ill.

### Second-Hand Ice Cream Cabinets

No. 1624 (Refrigeration contractors, Cuba)—"We are interested in the purchase of second-hand ice cream cabinets of different sizes, Frigidaire pre-

ferred. Will you kindly inform us the names of firms dealing in such equipment?"

### Henry Valve

No. 1625 (Dealer, Porto Rico)—"In the February issue of ELECTRIC REFRIGERATION NEWS is illustrated and described a new dehydrator made by the Henry Valve Co. Will you please give us the address of this manufacturer as we should like to get a quotation on this type of dryer using activated alumina. Feb. 21, 1934, is the date of issue."

Answer: 1001 N. Spaulding Ave., Chicago, Ill.

### Clago Refrigerator

No. 1626 (Dealer, Ohio)—"Have you any record as to who built the following refrigerator? Wiebolts V-I-D manufactured by Clago. We would like name and address of company building this compressor."

### Ice Cream Cabinets for Export

No. 1627 (Exporter)—"We are anxious to connect with a good manufacturer of ice cream cabinets, complete with units, for shipment to France and Belgium.

"We have tried the Nelson Cabinet Co. and the Universal Air Cooler Co. They are both tied up for that territory. If you know of any other reliable manufacturers who have this territory open, we will be glad to have you send us their names."

Answer: Manufacturers of ice cream cabinets are listed on page 222 of the 1934 REFRIGERATION DIRECTORY.

### Dehydrators

No. 1628 (Service company, Indiana)—"Kindly send me names and addresses of companies making a device to remove moisture from sulphur dioxide refrigerating systems."

Answer: The 1934 REFRIGERATION

DIRECTORY lists the following manufacturers of dehydrators:

Fedders Mfg. Co.  
57 Tonawanda St., Buffalo, N. Y.  
Henry Valve Co.  
1001 N. Spaulding Ave., Chicago, Ill.  
Imperial Brass Co.  
564 S. Racine Ave., Chicago, Ill.

### Line of Equipment Wanted for Brazil

No. 1629 (Exporter, New York)—"We are seeking a connection with some manufacturer of ice-making equipment for a firm in Brazil, and will appreciate word from American manufacturers who are not already represented there."

Answer: The News will gladly forward the name of any manufacturers interested in this inquiry.

### Coin Meters

No. 1630 (Distributor, New York)—"We would appreciate it if you would send us a list of manufacturers of coin meter clocks similar to those used by Frigidaire, General Electric, and other household refrigerator manufacturers."

Answer: See list on page 176 of the REFRIGERATION DIRECTORY.

### Books on Air Conditioning

No. 1631 (Engineer, New York)—"Kindly enter my order for a 1934 REFRIGERATION DIRECTORY, and also suggest a good book or two on air conditioning."

Answer: Two recent books on this subject are "Air Conditioning for Comfort" by S. R. Lewis, published by Engineering Publications, Inc., 1900 Prairie Ave., Chicago, Ill. (price \$3.50); and "Air Conditioning" by Moyer & Fittz, published by McGraw-Hill Publishing Co., 330 W. 42nd St., New York City (price \$4).

### Historical Data on Refrigeration

No. 1632 (Journalist, New York)—"I am writing you at the suggestion of Mr. W. W. Rodgers of the Westinghouse Electric & Mfg. Co. who has very kindly sent me some material dealing with the evolution of refrigeration, and believes you might be able to give me some items that would fit in well with a 'reader's interest' article.

"You will understand, of course, that I am writing for the layman and not for the trade.

"What I particularly want to get hold of is the story of what I am told was the first ice machine, one invented by an Englishman in the early 19th or late 18th century. If you could give me some details of the machine itself, or if you could tell me where to find this information, I should greatly appreciate it.

"And if you have any statistics for convenient use, showing the upswing in sales from the first use of electric refrigeration in homes up until the present time, I should be glad to have that too."

Answer: The patent on the first compression type refrigerating machine was granted by the English government in 1834 to Jacob Perkins, an American. He is generally accorded credit for the inventing the first machine to foreshadow present compression systems.

The Perkins machine employed ether as a refrigerant, and included a compressor, evaporator, condenser, and an expansion or regulating valve. The evaporator enclosed a system of pipes through which circulated brine was cooled to about 5° F.

The brine then passed into a long receptacle containing boxes filled with water which was frozen into blocks of ice. This arrangement, incidentally, was the forerunner of present brine circulating, or indirect systems of refrigeration.

For complete annual sales figures on household refrigerators since 1920, refer to the statistical section of the 1934 REFRIGERATION DIRECTORY.

### Small Compressor Efficiencies

No. 1633 (Manufacturer, Canada)—"Can you direct us to a source of information on average overall efficiencies of small methyl chloride compressors working at various suction and condenser pressures?

"Does the efficiency remain the same, or does it vary with the number of cylinders? We understand, of course, that the efficiency will vary according to the design and make—what we want is a good average."

Answer: For a discussion of this question, see the chapter entitled "Performance Data of Small Refrigeration Compressors" beginning on page 122 of the "Refrigerating Data Book" published by the American Society of Refrigerating Engineers. See also the booklet, "Arctic, the Refrigerant," published by the R. & H. Division of E. I. du Pont de Nemours Co., Inc., Wilmington, Del.

### Gauges Wanted

No. 1635 (Manufacturer, South Australia)—"We are manufacturers of small intermittent ammonia absorption machines, and wish to purchase small ammonia gauges (about two inches in diameter) showing from a 30 in. vacuum to about 300 lbs. pressure.

"Not knowing whom to address, we are asking if you will be kind enough to pass a copy of this letter on to several of your American manufacturers, requesting them to send us prices immediately in dozen lots. As the refrigeration season commences here in August, we will appreciate your prompt assistance."

Answer: We are asking several manufacturers of gauges to get in touch with you.

### Presidents' Names

No. 1636 (Home economist, Pennsylvania)—"Kindly advise me who is president of Williams Oil-O-Matic Heating Corp., Bloomington, Ill., and also of the Starr Co., Richmond, Ind."

Answer: C. U. Williams is president of Williams; Harry Gennett is president of Starr.

### Statistics

No. 1637 (Advertising agency, Illinois)—"We have a copy of the 1932 REFRIGERATION DATA BOOK, but are now making a new study of this field and would like to bring these figures up to date.

"If you published a 1933 data book we would appreciate a copy. If not I wonder if you could supply us with the 1933 figures on the total number of household refrigerators in use, the total number of wired homes in the country, and the number of wired homes in the 50 largest cities."

Answer: All the figures you require are published in the new 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK.

### Correspondence School Training

No. 1638 (Delaware)—"Can you advise me of a correspondence school that offers a course in commercial refrigeration? Particularly do I want one that is written from the sales angle—not the engineering. Not too technical, but authoritative.

"Is there any other source available to a commercial refrigeration salesman to whom he can go for specific information on commercial problems, both from the technical and sales standpoints, and feel free to call on as often as he wishes?

"Have you any literature available on commercial problems—beer cooling, milk cooling, etc.? I am experienced in selling, but new in refrigeration and want to learn it thoroughly."

Answer: For a correspondence school on refrigeration we suggest you direct an inquiry to Utilities Engineering Institute, 401 N. Wells St., Chicago, Ill.

For information on current practices in both selling and engineering phases of commercial refrigeration, subscribe to ELECTRIC REFRIGERATION NEWS, the weekly business paper of refrigeration, and secure a copy of the 1934 REFRIGERATION DIRECTORY whose Review Section treats all recent developments in refrigeration. A specific help in the beer-cooling field is the 112-page BSR COOLING DIRECTORY published last year.

### Service Information

No. 1639 (Service man, Iowa)—"I have been thinking of buying your 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK for some time, but as I am a service man I am primarily interested in knowing whether this book contains any information such as operating pressures, refrigerants used, etc. which would be helpful in servicing different makes of machines."

Answer: The DIRECTORY does not give operating pressures of the various machines, but the Specifications Section gives refrigerant used, ice melting capacity, kind of compressor oil, motor, bore and stroke, and other data on all popular makes of refrigerators.

A FAST MOVING LINE...



### That's GILMER'S 35-R assortment of moulded rubber electric refrigeration belts.

For a minimum investment (\$18.33) it gives you a quick turnover—and maximum profit (\$12.23). Included in the assortment are 35 belts that

enable you to service 35 makes—including 140 models—of popular electric refrigeration units. Each belt sleeved and marked for easy identification. 25 display hooks furnished—FREE—with each assortment. Write NOW for catalog sheet containing complete details, including belts for all makes and models.

The L. H. GILMER CO., Tacony, Phila., Pa.

Specialists in quality belts since 1903

**Gilmer**  
Makers of the  
World's Best-Known V-Belts

## CLASSIFIED

PAYMENT in advance is required for advertising in this column.

RATES: Fifty words or less, one insertion \$2.00; additional words four cents each. Three insertions \$5.00; additional words ten cents each.

### EQUIPMENT FOR SALE

FOR SALE. Bargain lot of 78 new Fedders domestic evaporators in original cartons. Type S-27, 3 tray—6 c.f. \$9.39. S-32, 4 tray—6½ c.f. \$10.90. Complete with trays. For SO<sub>2</sub> use. Reliable Refrigerator Company, 39 East 19th Street, New York, N. Y.

### USED EQUIPMENT FOR SALE

IF IN NEED of slightly used Refrigerator Equipment write us about any one of the following items: Weston or Jewell Refrigerator Test Meters, Premier Test Panels, Tyco Recording Pressure & Vacuum Gauge, Bristol Recording Thermometer 8° Range 20° to 120° F., Sagamo Special 5 Amp Watt Hour Meters, Cenco Megavac Vacuum Pump with Motor, United Test Gauges 0 to 150 lbs. and 30 Vacuum to 150 lbs., Clifford All Welded Oil Trap with Gauge, Warner Calcium Chloride Tank, Clifford Ash Tank, Economy Clifford All Metal Air Filter, Packless Clifford Valves, Standard Gas Mask, Buff Denco Gas Torch with Air & Gas Hose, Unit Hoists, IGL 18" Spark Proof Suction Fan for paint booth, AP 616 DeVilbiss Spraying Outfit with Gun Regulator Hose, AV DeVilbiss Spray Gun, Filter Respirator for spraying. Hieb Distributing Co., 905 Walnut St., Des Moines, Iowa.

### MISCELLANEOUS

SMALLEST ICE MACHINE manufactured. Design very new and proven. Overall height six inches. Compact, quiet, dependable, high volumetric efficiency. I. M. E. 50, 75 and 100 lbs. Low production cost. Also Water Cooler complete with unit. Weight 62 lbs. Samples available for test. Inquiries will be welcome. Our financial standing good. Box 625.

### INDEPENDENT SERVICE COMPANIES

HALETRIC Thermostat repair service. Ranco, B & B, Two dollars each, one year guarantee, prompt service. Haletric Laboratory, 1793 Lakeview Road, Cleveland, Ohio.

### Underwriters' Report on Refrigerants

No. 1640 (New Jersey)—"In the Jan. 24 issue of ELECTRIC REFRIGERATION NEWS there appears an article on hazards of refrigerants, reported by the Underwriters' Laboratories. Where can I secure a copy of this book?"

Answer: Address the Underwriters' Laboratories, 207 E. Ohio St., Chicago, Ill., asking for their report on "The Comparative Life, Fire, and Explosion Hazards of Common Refrigerants."

### Annual Sales Figures

No. 1641 (Telegram from subscriber in Georgia)—"For legal purposes require immediately figures approximately representing total dollar sales and total unit sales of domestic refrigerators in United States by years for past eight or ten years Stop Will appreciate your cooperation by collect wire today Stop Also send special delivery latest edition your trade Directory Stop Thanks."

Answer: Our record of unit and dollar sales of household refrigerators in this country follows:

Year	Unit Sales	Dollar Sales
1924	30,000	\$ 13,500,000
1925	75,000	31,875,000
1926	210,000	81,900,000
1927	390,000	136,500,000
1928	560,000	187,040,000
1929	780,000	235,330,000
1930	790,000	225,170,000
1931	905,000	241,530,000
1932	800,000	159,980,000
1933	1,015,000	178,680,000

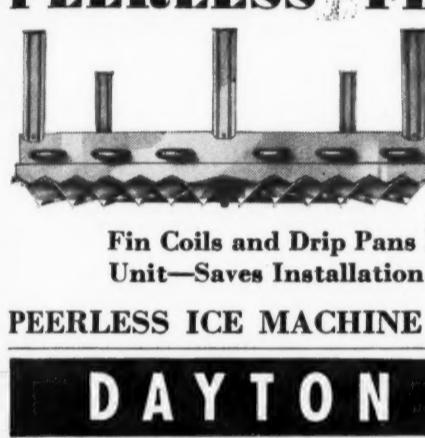
These figures represent sales in the United States only, being corrected for exports to other countries since 1929 when the U. S. government started to compile export figures on refrigeration.

### Sparton Defrosting Device

No. 1642 (Distributor, Iowa)—"Do you know who manufactures the synchronous clock device used on the Sparton electric refrigerator for automatic defrosting?"

Answer: No. Any information about it will be appreciated.

**PEERLESS FLASH COOLER**



The NEW Eye Appealing Method of Cooling Walk-In Refrigerators

**STYLE & RESULTS**

Fin Coils and Drip Pans Engineered in an Integral Unit—Saves Installation Cost and Operating Cost

PEERLESS ICE MACHINE CO. 515 W. 35th St. Chicago

**DAYTON V·BELTS**



● There is a Dayton V-Belt for all makes and types of refrigerators. A stock is available near you. Send for price list and name of your nearest distributor.

THE DAYTON RUBBER MFG. CO. DAYTON, OHIO

The world's largest manufacturer of V-Belts

**The Dayton CARRIER Truck**

Deliver Your Refrigerators on Rubber

Type X has 53 inch Handles and 8 inch Rubber Wheels. Type Y has 70 inch Handles, 5 inch Rubber Wheels and skids.

Type X with one strap \$16.00  
Type Y with one strap \$17.50  
f.o.b. Dayton

International Engineering Inc.  
Dayton, Ohio  
1